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MAY—JUNE 1966

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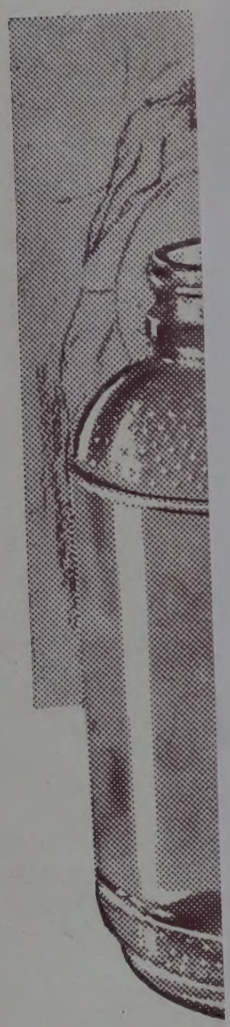

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Editorial

The announcement of devaluation of the rupee by the Finance Minister came as a surprise. This is the second time the rupee has been devalued. The first devaluation came in 1949.

It is evident that the devaluation has been forced on the country due to deficit financing, indiscriminate borrowing and heavily accumulated foreign debts. The step, it appears, has been taken on the advice of the International Monetary Fund as a prelude to granting further credits.

It is a bold step taken by the Government in order to encourage exports. To boost production, specially for export oriented industries, the Government has agreed to provide maintenance imports for essential raw materials and spares for machinery. A list of priority industries has been published. Sanitary cans and canned preserved fish industries are included in the list. The fruit and vegetable preservation industry deserve sympathetic consideration to be declared as priority industry, for maintenance imports.

The devaluation has caused considerable amount of difficulty in the maintenance of exports to East European countries on rupee payment basis. It is necessary that remedial steps are taken to solve the problems of exports to East Europe without any loss of time.

Consequent to devaluation, all the export incentive schemes have been withdrawn. The Government has given assurance to consider such cases sympathetically where additional assistance is necessary. This should be done at a very early date so that exports do not suffer.

The Indian Institute of Foreign Trade has carried out Commodity Study on Preserved Fruits and Vegetables after the devaluation. The report has been published. The report pin-points the problem of production and export marketing for consideration by the Government and the Industry in the overall interest of the development of food processing industry in the country.

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BROWN AND PINK DISCOLOURATION IN SOME PROCESSED FRUIT AND VEGETABLE PRODUCTS AND THEIR PREVENTION

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Discolouration is a serious problem in fruit and vegetable products. It means the change of colour induced by various factors such as enzymes, metals, organic acids, plant pigments, etc. It results in undesirable and unattractive appearance of the product, thereby reducing its market value and in certain cases, the nutritive value also. The problem of discolouration is complicated due to a multiplicity of unrelated changes taking place simultaneously, and further the coloured end products, which are humin like substances, are difficult to characterise[1].

Brown and pink discolouration are the two common types of discolouration met with.

1. Brown discolouration

There are two types of browning (*i*) Enzymatic and (*ii*) Non-enzymatic.

(*i*) *Enzymatic browning:* According to Overholser and Cruess[2], plant tissue contains the substrate oxygenase which in the presence of air yields a peroxide. This peroxide activated by the enzyme peroxidase, brings about the oxidation of phenolic substances giving rise to brown colour. The mechanism of discolouration is still unknown. Browning does not take place till the cells are damaged. The cause of damage may be physiological accumulation of respiratory products[3], mechanical or chemical. After the rupture of the cell, oxygen acting upon the system promotes colour development. Various factors such as temperature, pH, salts, inhibitors, sugars, trace metals, variety, maturity and electrical energy affect enzymatic browning. This type of browning is observed in the case of fruits such as apple, banana, cherry, fig, grape, peach and strawberry and in vegetables such as asparagas, cauliflower, potato, etc., when the cells are damaged and exposed to air.

Remedial measures

These measures depend upon the fruit or vegetable.

Apple: In the case of peeled apple slices, dipping for 2 minutes in a solution consisting of 1 per cent sodium chloride and 1 per cent citric acid in tap water prevents browning during dehydration. Citric acid may be replaced by 1 per cent tartaric acid or 0.5 per cent hydrochloric acid[4]. Before canning, the peeled slices should be kept under 2 to 3 per cent salt solution, until they are used for canning[5]. Lee *et al*[8] has suggested a combination of 600 p.p.m. sodium sulphite, 0.2 per cent 150 grade pectin and 0.05 per cent ascorbic acid as the best preventor of browning in frozen apple slices. Sodium bisulphite, aluminium chloride, barium chloride, calcium sulphide, magnesium chloride and zinc chloride have been found to suppress colour development in apple juice kept for 24 hours[7].

Banana: In the preparation of banana pulp, about 100 p.p.m. of potassium metabisulphite is added immediately after peeling to prevent browning. According to

Sehellak *et al*[6], sulphur dioxide inhibits the browning, but being unsaturated, gets easily fixed. This fixed SO_2 loses the capacity to reduce darkening.

A solution containing 1/2 oz. (14.15 g.) of an antioxidant consisting of 85 per cent sodium bisulphite, 10 per cent sodium carbonate and 5 per cent citric acid in one gallon of water has been suggested as a dip for some fruits and vegetables before canning or dehydration to prevent browning[9].

The enzymic system which causes the discolouration of cauliflower is inactivated by treating the prepared vegetable for approximately three hours in a solution containing citric acid, 400g.; $Na_2 SO_3$, 120 g.; ascorbic acid, 60 g. and a sufficient amount of sodium chloride necessary to yield an isotonic solution (about 2.5 kg.) per 100 lits. of water[10].

Blanching, in the case of vegetables, destroys the enzyme peroxide[11]. Addition of ascorbic acid to sauerkraut packed in pliofilm bags[12] and of sulphites and polysulphites of sodium or potassium during the preparation of potatoes and other vegetables[13] have been reported to be highly beneficial. Dipping fruit slices in 0.06 per cent solution of adenosine triphosphate and then freezing prevents browning[14].

(*ii*) *Non-enzymatic browning:* In fruit and vegetable products, several types of non-enzymatic browning could occur as follows:

1. By reactions between (*a*) aldehydes, ketones and reducing sugars, with amino acids, peptides and proteins (Maillard reactions), and (*b*) nitrogenous matter and organic acids themselves.

2. Browning may be due to caramelisation which occurs when polyhydroxy-carboxyl compounds such as sugars and polyhydroxycarboxylic acids are heated relatively to high temperatures in the absence of amino acids[15].

3. It may also be a type of oxidative reaction which converts ascorbic acid and polyphenol into di- or poly-carboxyl compounds[16]. Fruits and vegetables contain a mixture of a number of products such as catachols, polyphenols, sugars, ascorbic acid and other compounds containing carboxyl groups which undergo polymerisation and give rise to browning[17].

4. In certain cases, it may be due to metallic contamination with iron, copper, etc., present in the tinplate of the can, equipment, etc.

Iron compounds: In the case of canned apple, if the cans are not exhausted properly, the dissolved iron may react with the tannin of the fruit forming black colour and in the case of peaches, if the processing of sealed cans is delayed, browning occurs[18].

In the case of tomato ketchup, 'Blackneck' is due to iron compounds arising from equipment or the metal of the cap. With the spice tannins, ferrous tannate is formed and on oxidation, this forms the black ferric tannate[5].

Sometimes canned green asparagas turns brown or dark in colour rapidly after the cans are opened. This is due to the oxidation of ferrous iron by oxygen of the air to the ferric condition which reacts with an orthodihydroxy compound. In canned peas, browning is due to the formation of iron sulphide[5]. The darkening of sweet potatoes is caused by a combination of the tannins of the potatoes with ferric iron compounds dissolved from the tinplate.[18] In the case of canned pumpkin, the amino compounds present in the pumpkin react with the iron of the can forming brown discolouration in the canned product[5].

Ascorbic acid: Addition of ascorbic acid sometimes results in browning of the product.

In orange and tomato juices and serum and in mango and papaya pulps, addition of 500 mg. per cent ascorbic acid increases browning considerably[19].

Sulphur compounds: In the case of fruits canned in syrup prepared from sugar

containing small quantities of sulphur dioxide, the product may become black due to the blackening of the tinplate as a result of formation of iron sulphide[5].

Condensation products: Some products like dried fruits, marmalade, jams, preserves and syrups turn brown or dark in colour, through reaction between amino acids and hexose sugars and condensation of aldehydes derived from fruit sugars.

Remedial measures

These depend upon the type of discolouration and the causative factor or factors. Sulphur containing products should be packed in sulphur resistant lacquered cans only.

1. *Ascorbic acid and β-carotene:* Ascorbic acid, especially in combination with citric or malic acid or citric acid alone (5 per cent) inhibit browning in cherries[20].

β-carotene, when added to lemon squashes, mango pulp and a sucrose-glycine synthetic system (10 per cent sucrose, 2.5 per cent glycine in pH 3.4 citrate buffer) tends to reduce non-enzymatic browning. This effect is not found in tomato juice. β-carotene naturally present in *Badami* mango pulp is also helpful in reducing non-enzymatic browning[21].

Immersion in 70 mg. per cent ascorbic acid solution protects against browning and improves the texture of peeled apples. When 20 mg. per cent ascorbic acid is added to the syrup, canned apple is protected for 5 minutes. Canned peas are protected against browning by 30 mg. per cent ascorbic acid in syrup, canned figs require 40 mg. per cent ascorbic acid. Darkened grape juice turns to fresh juice colour by the addition of more than 50 mg. per cent ascorbic acid[22].

Ring discolouration in pea puree is controlled by ascorbic acid and to a less degree by sulphur dioxide, general browning being less in sulphited samples and more with ascorbic acid. There is no discolouration in field bean puree with any of the treatments. Browning in *amla* juice with 300 mg. per cent natural ascorbic acid is not enhanced by addition of 250 mg. per cent ascorbic acid[23].

To overcome the defect of blackneck in tomato ketchup, it should be deaerated and a tin foil-faced liner inserted into the caps. Siddappa *et al*[5] have studied the beneficial effect of addition of ascorbic acid in preventing blackneck formation.

Addition of a small quantity (50 to 100 mg. per can of butter size (401 × 300) of ascorbic acid prevents development of brown colour to some extent in canned cabbage[25].

2. *Sulphur dioxide:* Addition of sulphur dioxide results in less browning than addition of sodium benzoate, or pasteurisation, in bottled fruit squashes of musk melon, *amla*, jack fruit and papaya[24].

3. *Citric acid and sulphur dioxide:* By blanching in dilute solution (about 1 per cent) of citric acid or by adding a small quantity (about 0.5 per cent) to the covering brine, browning may be reduced in cabbage.[25] The use of sulfurous acid in potato drying prevents the brown reaction and further decomposition[26].

To prevent darkening of marmalades, addition of 4 gm. of potassium metabisulphite per 100 lb. of marmalade has been suggested, provided the product is not packed in tin containers[5].

2. Pink discolouration

This type of discolouration is a complicated one. It occurs in various fruit and vegetable products. It may be due to:

1. The presence of leucoanthocyanins which are converted into pink anthocyanidins on heating in acid medium[27].

2. Improper cooling after sterilisation in certain canned products.

3. Sometimes raw material grown in hot climates[5].

4. Reactions which form melanoidin.

5. Oxidation of polyphenols[28].

6. Potassium thiocyanate present in the product which on decomposition gives rise to discolouration[28].

Pink discolouration has been observed in the case of canned banana[29] and guava. In the case of canned *okra* seeds, it has been reported to be due to the presence of leucoanthocyanins[30].

Overheating or sweating of fresh pears before canning may also cause pink discolouration in the canned product[5]. Pears grown in certain areas have low pH, high acidity and high tannin content and these have been found to develop pink colour after canning. The pink pigment has been shown to be identical in R_f value with that of cyanidin[31]. Peaches also turn pink if the cans are not cooled properly after sterilisation[5].

After processing in can, the colour of the fresh pale green broad beans has been found to turn to a pale brown to reddish brown or grey, due to the partial conversion of leucoanthocyanins on heating into anthocyanidin and into brown polymerisation products partially[32]. Similar changes have been observed in the case of field beans and black eye peas. Brownish pink discolouration has been noticed in the case of canned cabbage[25]. In acidified white onion puree, the water soluble nitrogenous pigment is red coloured[34].

Remedial measures

Pink discolouration in canned pears can be prevented to some extent by avoiding overheating or sweating of fresh pears before canning, and also by cooling the cans properly after sterilisation.

By adding a small quantity of ascorbic acid (about 50 mg. to 100 mg. per can butter size—401 × 300), pink discolouration in the case of cabbage can be reduced during the first few weeks of storage. By blanching cabbage segments for 7 minutes in 0.5 per cent potassium metabisulphite solution, pink discolouration in canned cabbage can be inhibited considerably[25]. Taking proper care to retain the ascorbic acid of cabbage and to blanch it immediately after cutting and processing have been recommended as beneficial[28]. In canned *okra* sulphur dioxide (200 p.p.m. or more) in the covering brine has been found to inhibit the pink discolouration[30].

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STUDIES ON VARIETAL SUITABILITY ON MANGO FRUIT BY CANNING

S. S. TEAOTIA AND R. K. AWASTHI

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Mango, besides being a source of carotene and other minerals, also contains vitamins such as ascorbic acid, B_1, B_2, niacin, and is preserved in various forms. The bulk of the mango produced in India is preserved in dried form (*amchoor*) or pulp and canned slices. All varieties which are cultivated are not suitable for canning. Bose and Das[1] reported *Hemsagar* as the best variety for canning. *Langra* was also found satisfactory but could be stored only for 4 months. Siddappa and Rao[2] found poor storage of canned product of *Langra* variety. He also observed the tin content well within limits for certain varieties like *Neelum* and *Himayuddin*. However, there is scanty literature on the canning of mango fruit under Indian conditions. This study was therefore initiated at this institute to screen out the important varieties of mango for canning purposes. This study may also help in taking up hybridization programme to evolve suitable mango varieties for canning.

Materials and Methods

The study was conducted in 1963-65 after collecting fruits from seven years old trees of the collection block. In the first stage, there were nine varieties viz. *Bombay Yellow, Bride of Russia, Chausa, Jethui, Sheeredar, Taimuria, Langra Banaras, Kaithki Bihar, Neelum;* and four varieties, *Mahmudal Samar, Mohan Bhog, Dashehari* and *Mithwa Malda* were included in a later stage. Fruits were mature and firm at the time of canning. They were washed, peeled and the pulp was cut into suitable sizes. The slices (300 gms.) were then filled in plain one lb. butter size cans and covered with boiling syrup (235 gm. containing 0.25 per cent citric acid) leaving a head space of about $\frac{1}{4}''$. For the first five varieties, syrup of 40° Brix was used but later it was reduced to 35°Bx. Filled cans were then immediately exhausted at 180°F for 6 to 8 minutes till centre of the cans acquired a temperature of 175°F. They were sealed and processed for 18 mts. in boiling water. The cans were then cooled in running water, wiped dry and stored at room temperature for the period of experiment.

The total soluble solids were directly recorded by a hand refractometer and values corrected to 68°F. Sugars were estimated volumetrically by Lane and Eynon method (Winton and Winton[3]). Acidity and ascorbic acid were estimated by A.O.A.C. method[4].

Results and Discussion

During fruit preparation, data on the percentage of peel, stone and slices of mango varieties were also recorded to evaluate the physical characters of the varieties under study. Different values of these characters are given in Table 1.

The data from Table 1 show that the yield of slices varies from 43.5 per cent to 65.0 per cent. The percentage of 'A' grade slices was markedly high in the case of *Dashehari* (65 per cent) which is due to its significantly thin and lowest percentage

TABLE 1. *Physical characters of mango slices of different varieties*

Variety	Slices %	Peel %	Stone with pulp%	Variations in Slices			Peeling quality
				Texture	Colour	Flavour	
1963-64							
1. *Bombay Yellow*	50.0	24.5	25.5	Firm	Capucine yellow	Good	Good
2. *Bride of Russia*	48.0	23.7	28.3	Firm	Yellow	Good	Good
3. *Chausa*	52.0	15.5	32.5	Firm to soft	Amber yellow	Good	Medium
4. *Jethui*	60.0	14.4	25.6	Soft	Whitish yellow	Poor	Poor
5. *Sheeredar*	55.0	14.1	30.9	Firm to soft	Dark yellow	Good	Medium
6. *Taimuria*	53.5	16.5	30.0	Firm	Capucine yellow	Good	Medium
7. *Langra Banaras*	62.0	16.7	21.3	Firm	Lemon yellow	Good	Good
8. *Kaithki Bihar*	50.0	18.7	31.3	Firm to soft	Orange	Good	Medium
9. *Neelum*	58.5	20.2	21.3	Firm	Primuline yellow	Good	Good
1964-65							
10. *Mithwa Malda*	57.0	14.0	29.0	Firm to soft	Yellow	Good	Medium
11. *Dashehari*	65.0	13.3	21.7	Firm	Attractive yellow	Fine	Fine
12. *Mahmudal Samar*	43.5	13.8	29.2	Firm to soft	Yellow	Good	Medium
13. *Mohan Bhog*	63.0	14.0	23.0	Firm to soft	Yellow	Good	Medium

of peel and stone. The other varieties like *Mohan Bhog*, *Langra* and *Jethui* also showed quite high percentage but the texture was not very firm, except *Langra*, which is a disqualification in canning. Slices of *Dashehari* were of attractive yellow colour with pleasant flavour. *Bombay Yellow* and *Bride of Russia*, the early two varieties although produced good and firm slices but were poor in other characters. Among the late varieties, *Neelum* scored various points, which enhanced its reputation as a canning variety.

Chemical composition of mango varieties

A composite sample consisting of ten fruits each variety was taken for analysis purposes. The fruits were mature and firm ripe at the time of picking. They were washed, peeled, sliced very thin and homogenized in a Waring Blender for 5 mts. The sample was assayed for chemical constituents. The mean of three samples have been given in Table 2.

The data presented in Table 2 show that the maximum concentration of ascorbic acid to the extent of 110.0 mg./100 gm. was found in *Banaras Langra*, followed by *Neelum* and *Chausa*. The least concentration of ascorbic acid (8.0 mg./100 gm.) was observed in *Kaithki Bihar* and *Mahmudal Samar*. The variation in total soluble solids was between 16.8°Bx to 23.45°Bx, the minimum being in *Mithwa Malda* and maximum in *Chausa*. It is of interest to note that the percentage of total sugars is quite high in fruits of all the mango varieties ranging from 11.2 per cent

TABLE 2. *Chemical composition of mature fruits of mango varieties at the time of canning*

Variety	Ascorbic acid mg./100 gm. of edible pulp	T.S.S. at 20°C °Brix	Sugars			Acidity %	Sugars/ Acid ratio
			Reducing %	Non-reducing %	Total %		
1. *Bombay Yellow* ...	16.7	19.85	3.6	11.3	15.5	0.215	72.1
2. *Bride of Russia* ...	15.5	18.70	4.6	8.1	13.1	0.243	33.9
3. *Chausa*	42.2	23.45	2.9	13.9	17.6	0.282	62.4
4. *Jethui*	10.0	20.95	2.6	12.3	15.5	1.020	15.2
5. *Sheeredar*	13.3	20.95	5.1	10.8	16.5	0.273	60.4
6. *Taimuria*	23.0	22.30	2.5	15.96	19.3	0.339	57.0
7. *Langra Banaras* ...	110.0	19.80	3.4	8.3	12.14	0.319	38.0
8. *Kaithki Bihar*	8.0	20.30	6.7	8.74	15.9	0.360	44.2
9. *Neelum*	43.5	20.30	9.5	5.79	15.6	0.576	27.0
10. *Mithwa Malda*	10.0	16.80	4.3	8.12	12.9	0.360	35.7
11. *Dashehari*	27.7	20.30	3.9	10.97	15.5	0.288	53.6
12. *Mahmudal Samar* ...	8.0	16.80	8.34	5.66	14.3	0.430	33.3
13. *Mohan Bhog*	15.0	17.30	2.97	7.78	11.2	0.389	28.7

to 19.8 per cent. The variety *Bombay Yellow* and *Chausa* also showed the highest sugar acid ratio (72.1 and 62.4 respectively) but in *Dashehari*, it was only 53.6.

Cut-out test of canned mango slices

Canned mango slices which were stored for six months at room temperature were examined by the conventional cut-out method. A composite sample for chemical analysis was obtained by opening three cans of each variety. Slices were drained for three mts. on a six-mesh screen and were then transferred in a Waring Blender and comminuted for 5 mts. The samples thus prepared were used immediately for determining the ascorbic acid and other constituents. The data of the analysis are given in Table 3.

A vacuum of 10.5 to 12.0 inches was observed in all the varieties tested which shows that proper temperature was maintained for the preservation of slices. There was also uniformity for the drained weight slices in all the varieties except *Chausa*. However, it was interesting to note that the syrup density for *Chausa* and *Sheeredar* was the highest, 28.52 and 27.62 respectively and total sugars were also on higher side which make these varieties unsuitable for canning purposes. However, *Bombay Yellow* showed the lowest value. In *Langra Banaras*, high ascorbic acid content (52 mg./100 gm.) was found followed by *Neelum* which may be a good point for scoring these varieties for canning purposes.

Quality assessment of canned mango varieties

Mango varieties after storage at room temperature for six months were also examined to record the variations in syrup, flavour,

TABLE 3. *Cut-out data of canned mango slices after storage of six months at room temperature*

Variety	Vacuum in inches	Drained weight of slices %	T.S.S. of syrup °Bx	Sugars			Acidity %	Ascorbic acid mg./100 gm.
				Reducing %	Non-Reducing %	Total %		
1. *Bombay Yellow*	11.0	58.0	20.52	8.6	9.37	18.46	0.176	7.75
2. *Bride of Russia*	11.0	57.5	23.43	10.46	7.34	18.19	0.190	8.25
3. *Chausa*	11.5	47.5	28.52	10.63	13.75	25.10	0.198	18.0
4. *Jethui*	11.5	58.0	22.72	16.96	2.41	19.50	0.711	3.5
5. *Sheeredar*	12.0	57.5	27.62	18.46	5.44	24.20	0.229	6.1
6. *Taimuria*	11.0	58.0	24.63	10.42	10.94	21.93	0.360	10.4
7. *Langra Banaras*	10.5	57.0	24.63	5.89	11.61	18.11	0.264	52.0
8. *Kaithki Bihar*	11.0	58.5	22.63	8.80	9.10	18.38	0.416	3.0
9. *Neelum*	11.5	58.5	25.63	13.02	8.11	21.55	0.280	22.8
10. *Mithwa Malda*	11.0	57.0	23.63	10.96	8.14	19.53	0.320	6.0
11. *Dashehari*	12.0	57.5	23.63	11.16	9.87	21.55	0.200	13.2
12. *Mahmudal Samar*	11.5	58.0	21.13	13.58	5.19	18.94	0.360	4.6
13. *Mohan Bhog*	11.0	58.5	22.13	7.81	9.29	17.61	0.340	9.0

texture and colour based on visual and organoleptic test. Forty marks were allotted for all the components, ten marks each item. The changes occurring in syrup, flavour, firmness and colour that lowered the quality in the canned slices were designated by each of the four panel members as outstanding, good, fairly good, poor and unacceptable, using different numerical grades. Observations thus obtained from the examination of all the packs of canned mango slices are presented in Table 4.

On comparison of the visual and organoleptic values reported in Table 4, it is evident that *Dashehari* ranked best among all the varieties tried for canning in respect of flavour, colour and texture. The syrup was also clear indicating that the slices remained intact through out the experimental procedure. Next to *Dashehari* were found *Bombay Yellow*, *Bride of Russia* and *Neelum* in order of preference. *Langra Banaras* was also fairly good fulfilling the requisites of canning to some extent. However, other varieties were found unsuitable for canning purposes.

Summary

This study was conducted mainly to find out the possible varieties that may stand the canning trial. Thirteen varieties were tried at their full maturity stage. The slices were analysed for initial chemical constituents and after the usual process of canning, the cans were stored at room temperature for 6 months and analysed for sugar, ascorbic acid, acidity and texture of the mango slices, clarity of syrup, colour and flavour.

Dashehari was found to be the best variety for canning for texture, flavour,

TABLE 4. *Mean marks obtained for different canned mango varieties assessed for quality after six months storage (at room temperature)*

Variety	Taste and flavour 10	Colour 10	Texture 10	Syrup 10	Total 40	Canning quality
1. *Bombay Yellow*	8.2	8.4	8.2	9.0	33.8	Good
2. *Bride of Russia*	8.0	8.2	8.0	8.8	33.0	Good
3. *Chausa*	6.0	6.0	6.0	7.3	25.3	Poor
4. *Jethui*	2.0	3.0	4.6	4.5	14.1	Unacceptable
5. *Sheeredar*	6.2	8.0	6.0	6.0	26.2	Poor
6. *Taimuria*	6.0	8.2	6.4	5.5	26.1	Poor
7. *Langra Banaras*	6.9	6.8	6.7	7.9	28.3	Fairly good
8. *Kaithki Bihar*	3.5	5.6	4.3	4.8	18.2	Poor
9. *Neelum*	7.2	7.6	7.5	8.3	30.6	Good
10. *Mithwa Malda*	6.5	7.7	5.4	7.2	26.8	Poor
11. *Dashehari*	9.0	8.7	8.8	9.0	35.5	Fine
12. *Mahmudal Samar*	6.4	6.7	5.3	7.0	25.4	Poor
13. *Mohan Bhog*	3.7	6.7	5.4	5.5	21.3	Poor

colour, clarity of syrup and recovery of slices. Next in order of preference were *Bombay Yellow*, *Bride of Russia*, *Neelum* and *Banaras Langra*. Other varieties tried were not found suitable for canning. Maximum ascorbic acid concentration (52.0 mg./100 gm.) was found in *Banaras Langra* followed by *Neelum* (22.8 mg./100 gm.), *Chausa* (18.0 mg./100 gm.) and *Dashehari* (13.2 mg./100 gm.). About fifty per cent loss of ascorbic acid was observed in canned slices after six months storage. However, there seems to be no relation between the higher concentration of chemical constituents examined and better keeping qualities of mango slices in relation to texture, colour and flavour after canning under our conditions.

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PROXIMATE COMPOSITION AND SUITABILITY FOR PRESERVATION OF SOME IMPORTANT VARIETIES OF MANGOES GROWN IN SALEM

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Introduction

Mango being one of the most important commercial fruits of India, considerable attention is being paid in recent years to the development of varieties with special characteristics suited for preservation, storage, etc. A large number of varieties (over about 1,000) are grown in various parts of the country, each having its own peculiar taste, flavour and consistency. Quite often one and the same type has been grown under different names in different parts of the country. In this connection, it was of interest to study the proximate composition of five important varieties of mangoes grown in the Salem region and assess their suitability for preservation in different forms. The data collected in these studies are presented in this paper.

Materials and Methods

Five important varieties of mango viz., *Varagambadi Gundu*, *Nadusali*, *Pudur Ameen*, *Malgoa* and *Valaja* received from Salem in unripe condition were allowed to ripe at room temperature. When ripe, about 50 fruits in each variety were selected at random for the determination of physico-chemical composition and the remaining fruits were utilised for preservation in

TABLE 1. *Physical composition of different varieties of mangoes*

Particulars	Variety				
	Varagambadi Gundu	*Nadusali*	*Pudur Ameen*	*Malgoa*	*Valaja*
Average weight of the fruit (g.) ...	215	260	360	380	270
Peel % ...	17.12	13.83	21.81	20.18	16.52
Seeds % ...	16.69	12.70	13.40	12.84	12.17
Edible portion (by diff.) % ...	66.19	73.47	65.29	66.98	71.31
Actual yield of pulp % ...	55.86	59.92	55.10	59.64	59.40
Refractometer solids % at 20°C	20.94	15.44	14.44	19.46	21.46
pH of the pulp ...	4.5	4.8	4.6	4.8	5.0
Colour of the pulp	Orange yellow	Deep yellow	Yellow	Deep yellow	Yellow
Taste and flavour of the pulp ...	Taste and flavour very similar to characteristic Badami mango.	Taste and flavour very similar to characteristic Raspuri mango.	Taste and flavour very similar to Thothapuri mango.	Taste and flavour similar to Malgoa mango.	Peculiar taste and flavour similar to North Indian variety.

TABLE 2. *Proximate composition of different varieties of mangoes*

Particulars	*Varagambadi Gundu*	*Nadusali*	*Pudur Ameen*	*Malgoa*	*Valaja*
Moisture %	78.03	84.58	84.29	80.25	77.40
Ash—Total %	0.45	0.29	0.31	0.55	0.58
Ash—Acid soluble %	0.40	0.24	0.20	0.52	0.55
Ash—Acid insoluble %	0.05	0.05	0.11	0.03	0.03
Acidity as anhydrous citric acid % ..	0.26	0.12	0.21	0 26	0.21
Sugars—Reducing as I.S. %	2.65	3.60	2.21	4.06	3 62
Sugars—Total as I.S. %	19.23	12.92	12.65	15.69	16 56
Proteins (N × 6.25) %	0.56	0.53	0.65	0.63	0.71
Ether extractives %	0.24	0.10	0.04	0.07	0.09
Crude fibre %	0.63	0.48	0.46	0.72	0.76
Carbohydrates other than sugars by diff. %	0.61	0.98	1.39	1.83	3.69
Minerals:					
Calcium mg./100 g.	14.71	14.49	11.37	12 14	16.00
Phosphorus mg./100 g.	10.89	7.53	11.27	19.53	19.02
Iron mg./100 g.	0.43	0.56	0.37	0.42	0.86
Vitamins:					
True ascorbic acid mg./100 g.	56.5	6.24	2.48	11.39	7.57
β-carotene μg./100 g.	6082	3018	1663	1354	3172

TABLE 3. *Cut-out analysis of canned mango*

Particulars	*Badami*			*Varagambadi Gundu*		
	Initial	After 4 months Storage at		Initial	After 4 months Storage at	
		R.T.	37°C		R.T.	37°C
Vacuum (inches)	15.0	14.0	14.0	15.0	14.0	13.0
Head space (inches) ...	6/16	7/16	7/16	6/16	6/16	6/16
Refractometer Solids of Syrup %	28.0	29.0	29.0	29.0	29.0	29.0
pH of Syrup %	4.15	4.2	4.2	4.3	4.3	4.3
Clarity and colour of Syrup ...	Fairly clear, no sediment, orange yellow in colour			Fairly clear, no sediment, orange yellow in colour		
Jelmeter reading of Syrup (Secs.)	90	...	...	90	...	...
Colour of the fruit	Orange yellow	Orange yellow	Orange yellow	Orange yellow	Orange yellow	Orange yellow
Taste, Flavour and Texture of fruit	Sweet taste, characteristic mango flavour, soft in texture, not fibrous			Very similar to that of Badami mango, soft in texture, not fibrous		
Internal condition of can ...	Slight feathering with very slight purple staining	Feathering with slight purple staining		Very slight feathering with very slight purple staining	Slight feathering with very slight purple staining	

different forms. These experiments consisted of canning of slices and pulp and also preparation of powder (sweetened). *Badami* mango also included in these studies for comparison.

Analytical methods

Standard A.O.A.C.[1] methods were employed for determining the proximate composition of the pulp. The pH of the pulp was determined with a Beckman pH meter having glass electrode. Calcium in the ash was estimated by the A.O.A.C. method[1], phosphorus by the colorimetric method of Fiske and Subba Row[2] and iron by the thiocyanate colorimetric method of Wong[3]. The xylene extraction method of Robinson and Stotz[4] was employed for the estimation of ascorbic acid. β-carotene was determined by the chromatographic method of the Association of Vitamin Chemists[5].

Experimental

Canning of slices: Mango slices were canned adopting the following standard conditions. Sound and uniformly ripe fruits were selected, washed thoroughly in water and hand-peeled. About 300 g. of sliced fruits were filled into A1 Tall can (301 × 409) and covered with about 200 g. syrup of 40° Brix containing 0.25 per cent added citric acid. The cans were exhausted to can-centre temperature of 80°C, sealed, inverted and processed for 20 minutes in

slices of different varieties of mangoes

Nadusali			*Pudur Ameen*			*Malgoa*			*Valaja*		
Initial	After 4 months Storage at		Initial	After 4 months Storage at		Initial	After 4 months Storage at		Initial	After 4 months Storage at	
	R.T.	37°C		R.T.	37°C		R.T.	37°C		R.T.	37°C
15.0	13.0	11.0	13.0	12.0	12.0	16.0	15.0	15.0	15.0	11.0	11.0
5/16	7/16	8/16	6/16	5/16	5/16	5/16	5/16	5/16	6/16	7/16	7/16
27.0	27.0	28.0	26.0	27.0	26.5	28.0	28.5	28.5	36.0	36.0	35.5
4.15	4.10	4.20	3.75	3.90	3.90	4.60	4.6	4.6	4.6	4.70	4.65
Fairly clear, no sediment, orange yellow in colour			Fairly clear, no sediment, yellow in colour			Fairly clear, no sediment, yellow in colour			Fairly clear, no sediment, yellow in colour		
69	...	...	77	...	...	92	...	...	180	...	...
Deep yellow	Deep yellow	Deep yellow	Yellow	Yellow	Yellow	Deep yellow	Deep yellow	Deep yellow	Yellow with brownish discolouration		Brown
Acidic in taste, mild mango flavour, slightly fibrous in texture			Acidic in taste, very mild mango flavour, firm in texture			Mild mango flavour, soft in texture, slightly fibrous			Very sweet taste, affected flavour, soft, very fibrous		
Slight feathering with slight purple staining		Feathering with slight purple staining	Slight feathering with slight purple staining		Feathering with slight purple staining	Slight feathering with very slight purple staining		Feathering with slight purple staining	Slight feathering with deep purple staining		Feathering with deep purple staining

boiling water and then cooled. The initial cut-out examination of the canned product was made after storing the cans for about 20 days at room temperature to attain equilibrium. A few cans were also kept at 37°C for observation.

Canning of pulp: Ripe mangoes were hand-peeled, and the peeled fruits were passed through an APV Pulper to get uniform pulp. The pH of the pulp was then adjusted to about 4.0 by adding the required amount of citric acid. The pulp was then heated to 85°C, filled hot into A2½ cans (401 × 411) which were sealed, inverted and finally processed for 15 minutes in boiling water and cooled. The cut-out examination of the canned pulp was made the next day.

Preparation of mango powder: Mango powder (sweetened) was prepared from canned pulp by the puff-drying technique as standardised in this laboratory[6]. Different samples of mango powder were then analysed for their important constituents and also evaluated organoleptically.

Results and Discussion

The physical composition of different varieties of mangoes is shown in Table 1. It will be seen that the pulp content varied from about 65 per cent to 74 per cent in the different varieties. The total soluble solids in the pulp ranged from 14.4 per cent to 21.5 per cent. The pH of the pulp varied from 4.5 to 5.0 indicating thereby the necessity of bringing down the pH to about 4.0 for canning the pulp. As regards colour, taste and flavour of the pulp, except *Valaja*, the other four varieties were found to be similar to South Indian popular commercial varieties, namely *Badami*, *Raspuri*, *Thothapuri* and *Malgoa* respectively. *Valaja* had a peculiar taste and flavour which was not quite acceptable and also changed during processing.

Data regarding the proximate composition of the edible portion of the fruit are given in Table 2. The moisture content varied from about 77.0 per cent to 85 per cent while the total sugar content ranged from 12.65 to 19.23 per cent. The acid content was low in all the varieties. Except

TABLE 4. *Cut-out analysis of canned pulp of different varieties of mangoes*

Particulars	*Badami*	*Varagambadi Gundu*	*Nadusali*	*Pudur Ameen*	*Malgoa*	*Valaja*
Vacuum (Inches) ...	15.0	16.0	15.0	15.0	15.0	15.0
pH of the pulp ...	4.05	4.10	4.15	4.25	4.3	4.3
Refractometer solids% ...	19.0	21.0	15.0	15.0	19.0	22.0
Moisture% ...	80.25	77.90	84.58	84.25	80.27	77.39
Acidity as anhydrous citric acid% ...	0.60	0.47	0.39	0.40	0.46	0.49
Sugars—Reducing as I.S.% ...	4.83	4.22	4.97	3.50	4.90	6.02
Sugars—Total as I.S.% ...	15.00	19.23	12.92	12.64	15.69	16.5
True ascorbic acid mg./100 g. ...	29.81	49.45	3.87	Nil	14.32	5.19
β-carotene μg./100 g. ...	4887	4996	2641	1770	1553	3052
Remarks with reference to colour and flavour	Orange yellow in colour, characteristic Badami mango flavour	Orange yellow in colour, flavour very similar to Badami mango	Deep yellow in colour, flavour similar to Raspuri mango	Yellow in colour, flavour similar to Thothapuri mango	Deep yellow in colour, characteristic Malgoa mango flavour	Yellow in colour, flavour similar to North Indian Sundoori variety

Varagambadi Gundu, all the other varieties contained comparatively only a small amount of ascorbic acid and β-carotene. *Varagambadi Gundu* was outstanding in that it contained a high amount of ascorbic acid and also β-carotene (56.8 mg./100 g. and 6082 μg./100 g. respectively). The other constituents were practically the same in all the varieties.

The results of the cut-out examination of the canned slices are summarised in Table 3. *Badami* mango, which is at present an outstanding canning variety, has been included in these studies for comparison. Of the five varieties studied, *Varagambadi Gundu* gave the best canned product. The colour, flavour and texture of the canned slices were practically similar to those of *Badami* mango. *Valaja* was not suitable for canning because there was brownish discolouration of the slices and the flavour also was adversely affected. Canned *Pudur Ameen* had good texture of the slices but the flavour was mild and the taste was acidic. In the case of *Nadusali* and *Malgoa*, the canned slices were fibrous in texture and the mango flavour was mild. Except in the case of *Valaja*, the canned slices of all the other varieties kept well for about 4 months even at 37°C. In addition to the predominant mango flavour, there was a slight perceptible papaya flavour also in the canned slices of all the varieties of mangoes. This change in flavour was, however, not quite noticeable in the canned pulp.

The results of cut-out examination of canned mango pulps are given in Table 4. Most of the original colour and flavour of the pulp was retained during canning in all the varieties. Data on the retention of ascorbic acid and β-carotene are summarised in Table 5. It will be seen that practically all the ascorbic acid present in the pulp of *Pudur Ameen* was destroyed during canning. In the pulp of other varieties, the retention varied from 62 to 96 per cent. In the case of *Varagambadi Gundu*, which contained the highest amount of ascorbic acid, the retention was as high as 87 per cent. Retention of β-carotene varied from 81.6 per cent to 100 per cent. Pulp from *Varagambadi Gundu*, which contained the highest amount of β-carotene, retained about 82 per cent of it after canning. Slightly higher values for β-carotene obtained in the case of canned pulp of *Pudur Ameen* and *Malgoa* may be attributed to slight experimental errors in its determination.

TABLE 5. *Effect of canning on ascorbic acid and β-carotene content of different varieties of mango pulp*

Name of variety	Moisture content %		True ascorbic acid			β-carotene		
			Dry weight basis		% Retention	Dry weight basis		% Retention
	Before canning	After canning	Before canning mg./100 g.	After canning mg./100 g.		Before canning μg./100 g.	After canning μg./100 g.	
Varagambadi Gundu ...	78.03	77.90	257.1	223.8	87.0	27680	22600	81.6
Nadusali ...	84.58	84.58	40.47	25.11	62.0	19570	17130	87.5
Pudur Ameen ...	84.29	84.25	15.79	Nil	0.0	10590	11240	100
Malgoa ...	80.25	80.27	57.66	55.20	95.7	6855	7868	100
Valaja ...	77.40	77.30	33.50	22.84	68.2	14040	13450	95.8

The results of analysis of important constituents of mango powder prepared from six varieties of mangoes are summarised in Table 6. It will be seen that *Varagambadi Gundu* gave a product very similar to that of *Badami* mango. From the point of view of ascorbic acid and β-carotene content, powder prepared from *Varagambadi Gundu* was better than that of *Badami* mango. The other varieties gave products which were dull in colour with mild or affected flavour and thus were unsuitable for making powders. Data on the retention of ascorbic acid and β-carotene content during preparation of powder from canned pulp are summarised in Table 7. It will be seen from this table that the retention of ascorbic acid varied from about

TABLE 6. *Analysis of powders prepared from different varieties of mangoes*

Variety	Moisture %	Colour and flavour	Tintometer units	True ascorbic acid mg./100 g.	β-carotene μg./100 g.
Badami ...	0.80	Yellow colour with characteristic mango flavour	9Y, 2R	23.88	2816
Varagambadi Gundu ...	0.65	,,	9Y, 2R	36.57	3159
Nadusali ...	0.59	Light yellow in colour, flavour affected	4Y, 1.2R	3.15	1170
Pudur Ameen ...	0.52	Dirty yellow in colour with mild Thothapuri mango flavour	3Y, 1R	Nil	808.9
Malgoa ...	0.70	Dull yellow in colour with mild Malgoa mango flavour	3Y, 1R	9.08	497.2
Valaja ...	1.10	Dull yellow in colour, flavour affected	3Y, 1R	3.03	581.5

TABLE 7. *Effect of vacuum shelf drying on ascorbic acid and β-carotene content of mango pulps (sweetened) of different varieties*

Name of variety	Moisture %	Ascorbic acid mg./100 g. dry weight basis		% Retention	β-carotene μg./100 g. dry weight basis		% Retention
		Theoretical value	Actual value		Theoretical value	Actual value	
Badami ...	0.80	24.88	24.07	96.7	4079	2839	69.6
Varagambadi Gundu	0.65	40.50	36.81	90.9	4092	3180	77.7
Nadusali ...	0.59	3.43	3.17	92.4	2289	1177	51.4
Pudur Ameen ...	0.52	nil	nil	0.0	1537	813.2	52.9
Malgoa ...	0.70	9.10	9.15	100.0	1297	500.8	38.6
Valaja ...	1.10	4.23	3.06	72.4	2488	588.0	22.6

72 per cent to 100 per cent. *Varagambadi Gundu*, which contained the highest amount of ascorbic acid, retained about 91 per cent of it in the powder also. In the case of *Badami* mango powder, the retention ranged from 23 per cent to 78 per cent. *Varagambadi Gundu*, which contained the highest amount of β-carotene, retained 77.7 per cent of it in the powder. *Badami* mango retained about 70 per cent of β-carotene in the powder.

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A NOTE ON PROXIMATE, MINERAL AND VITAMIN COMPOSITION OF SOME IMPORTANT VARIETIES OF MANGOES OF ANDHRA PRADESH

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A few promising varieties of mangoes have recently been developed at the Government Fruit Research Station, Kodur. These include four hybrid varieties also. It was of interest to determine the physico-chemical composition of these varieties before assessing their suitability for preservation. The data collected in this connection are presented in this note.

Materials and Methods

Samples of fruits (6-12 in each of 13 varieties), which were received from the Fruit Research Station, Kodur, in firm-ripe condition, were ripened at room temperature (25-28°C) in the laboratory prior to taking them up for analysis. For determining the proximate composition of the pulp of the fruit, standard A.O.A.C. methods were employed[1]. The pH of the pulp was determined with a Beckman pH meter, having glass electrode, and the viscosity of the blended pulp was determined using a Brookefield Synchrolectric Viscometer. Calcium in the ash was estimated by the A.O.A.C. method[1], phosphorus by the colorimetric method of Fiske and Subba Row[2] and iron by the thiocyanate colorimetric method of Wong[3]. β-carotene was determined by the chromatographic method of the Association of Vitamin Chemists[4]. The xylene extraction method of Robinson and Stotz[5] was employed for the estimation of ascorbic acid.

Discussion

From the data regarding the physical composition of the fruits shown in Table 1, it will be seen that *Yerramulgoa* was the largest among the varieties examined, having the maximum weight, height and diameter, while KO_{16} was the smallest. The pulp content of the different varieties ranged from 59.4 per cent to 76.6 per cent, KO_{16} containing the least and *Yerramulgoa* the highest percentage of pulp. The pH of the pulp varied from 3.7 to 5.2, and the viscosity from 1850 centipoises to 6100 centipoises. The total soluble solids in the pulp ranged from 11.5 per cent to 26.0 per cent. From the point of view of colour, flavour and consistency of pulp, KO_8, KO_{16} and *Yerramulgoa* could be considered as good varieties. KO_8 and KO_{16} had a highly pleasant flavour, resembling that of *Badami* or *Alphonso* mango. Among the four hybrid varieties examined, *Neelum* × *Yerramulgoa* was the best.

Data regarding the chemical composition of the fruits are given in Table 2. The variation in the total sugar content was quite large (8.4 per cent to 19.8 per cent). The other constituents were practically the same in all the varieties. The iron content was quite low. The ascorbic acid content of the pulp ranged from just a trace to nearly 62 mg. per 100 g. and β-carotene content from 371 μg. to 6673 μg. per 100 g. The variation in these two important vitamin

constituents was thus quite large. KO_{16} was outstanding in that it contained a high percentage of both ascorbic acid and β-carotene (62 mg./100 g. and 6673 μg./100 g. respectively). The colour, consistency and flavour of the pulp of this variety were also good. The comparatively small size of this fruit is, however, a single draw-back, since it could not be utilised for canning in the form of large slices. The hybrid variety *Yerramulgoa* vs. *Neelum* was superior to *Yerramulgoa* in regard to nutritional composition and also colour and flavour of the pulp.

Acknowledgement

The authors feel highly grateful to Dr H. A. B. Parpia, Director, Central Food Technological Research Institute, Mysore, for his keen interest in this investigation. Thanks are also due to the Superintendent, Fruit Research Station, Kodur, Andhra Pradesh, for kindly making available the fruits of different varieties used in the study.

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TABLE 1. *Physical composition of*

Variety	KO_7	KO_8	KO_{15}	KO_{16}	KO_{22}	*Buddhi pasand*
Weight of the fruit (g.) Min. ...	215	237	255	119	263	222
Max. ...	314	303	460	151	340	272
Av. ...	280	273	393	139	297	239
Length of the fruit (cm.) Min. ...	9.0	8.5	8.9	7.2	9.2	7.9
Max. ...	10.2	9.3	11.3	8.0	15.8	9.1
Av. ...	9.4	9.0	10.4	7.6	10.5	8.5
Diameter of the fruit (cm.) Min. ...	7.1	7.0	8.2	5.4	8.0	7.7
Max. ...	8.0	8.1	9.2	6.6	9.0	8.6
Av. ...	7.5	7.6	8.7	5.9	8.6	8.2
Shape, size and colour of fruit ...	Small to medium, yellow colour with slight green patches through-out the fruit	Medium size, uniform yellow	Small to medium, all green coloured	Uniformly small fruit, yellow with green patches	Uniformly medium, yellow coloured with green patches	Small size, half yellow, half green
Peel (%) ...	20.6	15.6	13.9	17.0	15.8	20.3
Stone (%) ...	19.6	14.7	11.1	23.0	14.0	12.7
Pulp by diff. (%) ...	59.8	69.7	75.0	59.4	70.2	67.0
Refractometer solids (%)	25.0	17.5	13.5	16.5	16.0	11.5
pH ...	5.0	5.1	4.2	4.8	4.8	3.7
Viscosity (centipoises) ...	2750	6100	1460	3100	3200	...
Colour, flavour and consistency of pulp ...	Dull yellow, viscous, sweet strong flavour	Orange yellow, smooth but highly viscous, pleasant mellowed taste resembling Badami mango flavour	Pale yellow, less viscous, very acidic with very slight mango flavour	Orange yellow, highly viscous, pleasant mild flavour of Badami mango	Orange yellow, viscous, sweet with slight mango flavour	Light yellow, viscous, highly acidic with slight mango flavour

Panchadara-kalsa	*Yerramulgoa*	*Chinna-suvarnarekha*	*Neelum* × *Yerramulgoa*	*Pancha-darakalsa* × *Neelum*	*Chinna-suvarnarekha* × *Jehangir*	*Neelum* × *Himayuddin*
232	482	226	233	...	157	212
299	572	304	365	...	365	278
269	526	215	282	...	282	239
8.6	10.5	9.4	8.8	...	8.0	8.6
9.4	11.6	10.3	10.6	...	11.2	10.9
9.1	11.0	10.2	9.4	...	9.9	9.7
7.2	9.6	6.5	7.2	...	6.1	6.6
8.3	10.2	7.5	8.7	...	8.2	7.5
7.7	10.0	7.0	7.6	...	7.4	7.7
Medium size, yellow with slight green patches	Big size, uniform yellow with cherry red patches	Elliptical shape, medium size fruit, cherry red with yellow and green patches	Medium size, yellow fruit with very faint cherry red colour at the stem end		Yellow fruits with green patches and faint cherry red colour at the stem end, small to big size	Fruits elliptical in shape, uniform medium size, all green with a few black spots
13.0	14.1	14.9	13.7	...	13.6	10.7
13.5	9.3	16.7	12.6	...	13.6	15.6
73.2	76.6	68.4	73.7	...	72.8	73.7
16.0	16.0	15.0	20.0	21.0	18.0	26.0
4.3	4.4	3.9	4.7	4.2	4.4	5.2
2350	1850	2550	3650	...	2500	Not homogeneous
Light yellow, highly viscous, pleasant flavour	Light yellow, less viscous, mild *Malgoa* flavour	Light yellow, less viscous, mild mango flavour	Attractive yellow, smooth, viscous, much better colour and flavour than *Yerramulgoa*	Light orange yellow, slightly fibrous, less viscous, mild *Neelum* flavour	Dull yellow, smooth, viscous, combined flavour of *Neelum* and *Jera*, not pleasing	Light brownish yellow, lumpy consistency, predominant *Neelum* flavour

TABLE 2. *Chemical composition of some important varieties of mangoes*

Variety	KO_7	KO_8	KO_{15}	KO_{16}	KO_{22}	*Buddhi Pasand*	*Panchadarakalsa*	*Yerramulgoa*	*Chimnasvarna-rekha*	*Neelum × Yerra-mulgoa*	*Panchadarakalsa × Neelum*	*Chimnasvarna-rekha × Jehangir*	*Neelum × Himayuddin*
Moisture (%)	73.8	81.7	84.9	81.9	82.9	86.7	83.1	83.0	82.7	78.6	76.5	80.1	72.2
Ash, total (%)	0.76	0.53	0.53	0.70	0.52	0·50	0.43	0.53	0.58	0.47	...	0.63	0.63
Ash, acid soluble (%)	0.70	0.50	0.48	0.65	0.50	0.46	0 42	0.50	0.50	0.45	...	0.56	0.60
Ash, acid insoluble (%)	0.06	0.03	0.05	0.05	0.02	0.04	0.01	0.03	0.08	0.02	...	0.07	0.03
Sugars, reducing as I.S. (%) ...	1.75	2.54	1.89	1.91	2.56	4.47	4.04	3.39	3.61	2.10	8.80	3.50	3.90
Sugars, total as I.S. (%) ...	19.91	13.84	10.44	12.45	13.34	8.42	13.52	14.47	12.45	15.60	16.00	14 30	19.80
Acidity as anhydrous citric acid (%) ...	0.28	0.19	0.60	0.38	0.22	0.71	0.31	0.35	0.66	0.26	0.50	0.37	0.20
Protein (N×6.25) (%)	1.12	0.74	0.70	0.91	0.70	0.26	0.23	0.23	0.25	1.03	...	0.77	1.20
Ether extractives (%) ...	0.03	0.02	0.07	0.05	0 04	0.05	0.04	0.08	0.13	0.08	...	0.08	0·08
Crude fibre (%)	0.93	0.68	0.52	0.99	0.66	0.15	0.30	0.43	0.29	0.65	...	0.55	0.97
Minerals:													
Iron mg./100 g.	Trace	Trace	Trace	Trace	Trace	0.94	0.42	0.57	0.22	1.02	...	2.65	0.69
Calcium mg./100 g.	19.42	13 77	4.19	11.45	7.26	5.40	7.30	7.90	8.30	11.46	...	10.38	17.79
Phosphorus mg./100 g.	26.56	24.45	16.54	26.20	20.07	15.00	13.00	9.50	22.00	16.89	...	26.15	31.19
Vitamins:													
Ascorbic acid mg./100 g.	3.31	9.30	5.68	61.60	5.70	1.10	3.80	1.60	3.70	5.80	48.80	Trace	9.20
β-carotene μg./100 g.	929	3067	514	6673	1936	619	1112	412	669	1727	2453	371	1224
Total carotenoids as β-carotene (μg./100 g.)	1849	4469	793	7307	3250	1077	...	871	1395	3324	5921	1416	2529

Book Review

Food Technology the World Over, Vol. II. Edited by MARTIN S. PETERSON AND DONALD K. TRESSLER (The AVI Publishing Co. INC. Westport, Connecticut), 1965, pp. ix + 414; Price $ 14.00.

The most pressing problem of the day is to use efficiently the available food resources of the world. There are several countries where food supplies are inadequate but fuller exploitation of the resources is possible if modern agricultural practices and related techniques are adopted.

This volume of 'Food Technology the World Over', the second of the two-volume set, deals with countries which have great potential for increasing their food supplies, and the information contained in this book will help the interested in assessing what the modern techniques can do to improve the food situation.

The volume is organised in four parts; the first part (Chapter 13) is a general survey of technical literature on food processing and related aspects. The bibliography at the end of the Chapter lists some important books on various branches of food technology.

Chapters 14 and 15 comprising Part II deal with the Latin America and Brazil. One chapter each in Part III is devoted to Tribal Africa, Egypt and Israel.

Part IV dealing with Asia has 5 chapters, one each devoted to Communist China (with a short note on South East Asia), Nationalist China, India, the Philippines and Japan. Additional information on Communist China is contained in an appendix.

Information in each chapter in this volume is organised more or less on the same lines as in the first volume of the set. Subjects discussed in each chapter relate to (1) Food Production and Consumption, (2) Food Industries, (3) Food Technological Research and Training, (4) Food Standardization and Legislation etc.

Most of the countries covered in this volume can be classified as developing countries and yet it is interesting to note that food preservation is still rather primitive and traditional in some areas whilst in others more modern techniques have already been adopted. Some countries have registered significant improvement in the nutritional status of their people through the introduction of better agricultural practices and improved techniques of food preservation. Frank appraisal has been made of the scope of food technological research and it has been pointed out that the subject deserves better attention and encouragement by the government authorities and the food industries.

This volume presents an interesting contrast as compared to the first volume and highlights the gap that exists in the level of technologies between the highly industrialised and the developing nations. As I had commented while reviewing Vol. I, the authors have provided valuable information on the food economics of different nations of the world and they deserve credit and appreciation.

The logical sequence to this set of two-volumes should be monographs embodying more intensive surveys and discussions on the status of individual subjects such as food industries (commodity-wise), food research and training, food legislation etc., in different parts of the world.

D. S. BHATIA

NOTES and NEWS

- *Mysore's Plan to step up Pineapple output*
- *Tariff Revision Committee Reconstituted*
- *Enquiry committee constituted to conduct a review of the working of the Tariff Commission, Bombay*
- *Indian Standards Institution—Tenth Indian Standards Convention*
- *Indian Standards—Food products Canned peas, okra (Bhindi) and Tomatoes*
- *Bombay Provision Merchants' Association*
- *Development of fruit preservation industries in Rajasthan—Open House Technical Discussion*

Mysore's Plan to step up Pineapple output

A crash programme to step up production of pineapple and banana, both foreign exchange earners, has been taken up by the Mysore Horticulture Department. It has been proposed to cover 20,000 more acres under banana and 10,000 acres under pineapple during the Fourth Plan. Now about 57,000 acres are under banana and 1,000 acres under pineapple.

Under crash programme the Department will supply three suckers on condition that each agriculturist in turn supplies two suckers to the Department. In that way it is proposed to multiply suckers sufficient to cover fresh areas to be brought under banana and pineapple cultivation.

There is also a scheme to bring about 25,000 more acres under potato during the plan. Now 30,000 acres are under potato in the State, including 15,000 acres in Hassan District cultivated under rain fed conditions and 10,000 acres in Bangalore and Kolar Districts cultivated under irrigated conditions.

Tariff Revision Committee Reconstituted

The Government of India has decided to reconstitute the Tariff Revision Committee. The composition of the Tariff Commission is as follows:

1. Shri S. Subramanian, Indian Statistical Service. *Chairman.*
2. Mr R. V. Layden, M/s. Voltas Ltd., Bombay, and Associated Chambers of Commerce of India, Calcutta.
3. Shri D. S. Mulla, All-India Manufacturers' Orgn., Bombay.
4. Shri Gulabchand G. Siraj, All-India Exporters' Chamber, Bombay.
5. Dr R. G. Agrawal, Deputy Secretary, Federation of Indian Chambers of Commerce and Industry, New Delhi.
6. Shri E. S. Krishnamoorthy, Ex-Chairman, Central Board of Revenue.
7. Shri K. Narasimhan, Officer on Special Duty, Ministry of Finance (Department of Revenue and Insurance), New Delhi.
8. Shri R. C. Shah, President, All-India Importers' Association, Bombay.
9. Shri P. L. Sahgal, Industrial Adviser, Ministry of Supply and Technical Development (Directorate General of Technical Development), New Delhi.
10. Shri C. Balasubramaniam, Deputy Secretary, Ministry of Industry, New Delhi.
11. Shri S. C. Mukherjee, Deputy Iron and Steel Controller, Ministry of Iron and Steel, New Delhi.
12. Shri S. P. Gagnani, Deputy Secretary, Ministry of Mines and Metals, New Delhi.
13. Shri A. P. Verma, Deputy Secretary, Ministry of Petroleum and Chemicals, New Delhi.
14. Shri Ram Saran, Additional Economical and Statistical Adviser,

Ministry of Food and Agriculture, New Delhi.

15. Dr P. V. Gunishastri, Secretary, Tariff Commission, Bombay.
16. Shri P. V. Raghavan, Director of Statistics, Offices of the Chief Controller of Imports and Exports, New Delhi.
17. Dr S. G. Rao, Director-General, Department of Commercial Intelligence and Statistics, Calcutta.
18. Shri S. Venkatesan, Indian Revenue Service. *Member-Secretary.*

Enquiry Committee constituted to conduct a review of the working of the Tariff Commission, Bombay

Chairman

1. Dr V. K. R. V. Rao, Member, Planning Commission, New Delhi.

Members

2. Shri M. P. Pai, Chairman, Tariff Commission, Bombay.
3. Dr D. K. Rangnekar, Special Representative, Economic Times, New Delhi.
4. Dr D. T. Lakdawala, Department of Economics, University of Bombay, Bombay.
5. Shri H. N. Ray, Additional Secretary, Ministry of Finance, New Delhi.
6. Dr K. S. Krishnaswamy, Economic Adviser, Planning Commission, New Delhi.

Member-Secretary

7. Shri P. K. J. Menon, Joint Secretary, Ministry of Commerce, New Delhi.

The terms of reference of the Committee will be as follows:

(*a*) To review the working of the Tariff Commission since its inspection in 1952;

(*b*) to suggest amendments to the existing Act in order to effect improvements;

(*c*) to review the policy of protection to industries taking into account the present restrictions on imports; and

(*d*) to examine and suggest what other functions can be entrusted to the Tariff Commission having regard to the requirements of development planning in the country and to recommend changes in the Constitution and functions of the Commission.

The Committee will submit its report to Government within six months.

This cancels all previous Notifications on this subject.

INDIAN STANDARDS INSTITUTION

Tenth Indian Standards Convention

The Tenth Indian Standards Convention of the Indian Standards Institute will be held at Ernakulam from 26 to 31 December 1966.

The Convention will discuss subjects of topical interest in the following seven technical sessions:

(*a*) Standardization for Import Substitution.

(*b*) Metric Changeover—Remaining Tasks.

(*c*) Company Standardization and productivity.

(*d*) Standardization and Small Scale Industries.

(*e*) Training in Standardization Technology.

(*f*) Standards for the Home.

(*g*) Standards for Technical Editors and Publishers.

About 800-900 delegates from different industrial and commercial organizations; scientific research and technical institutions; organized consumer and purchase

bodies; and Central and State Governments are likely to participate in the Convention. In addition, some delegates from overseas countries are also expected to attend the convention.

The Institution has been holding Standards Conventions every year at important industrial centres in the country with the object of providing a forum for scientists, technologists, industrialists and others working in industrial, government and research organizations to discuss problems of mutual interest and to share their knowledge and experience with others in selected fields of standardization; creating standards-consciousness among the public; and for promoting implementation of Indian Standards in the context of rapid industrial development. Such conventions have already been held in Calcutta (twice), Bombay, Madras, Delhi, Hyderabad, Kanpur, Ahmedabad and Bangalore.

Some excursions and visits of technical, historical and cultural interests to places of importance in and around Kerala are also proposed to be organized for the benefit of delegates, on the occasion of Tenth Indian Standards Convention.

A Reception Committee has been set up under the Chairmanship of Shri Joseph Chakola, a well-known industrialist of Kerala, to make local arrangements in respect of accommodation, transport, visits and excursions, etc.

INDIAN STANDARDS

Food Products: A standard specification for Indian multipurpose food flour which is a blend of edible groundnut flour, Bengal gram flour and/or skimmed milk powder fortified adequately with calcium salts and some essential vitamins developed by the Central Food Technological Research Institute, Mysore, has been formulated, specifying the requirements and the methods of test for the same. A suggested procedure for production is, also, included in the standard. With the object of providing a pattern of production and utilization, the Government of India has established two units with the UNICEF assistance.

Canned Peas, Okra (Bhindi) and Tomatoes

There is ample scope for the development of external and internal trade in canned vegetables which are becoming very popular all the world over. It is, however, necessary to ensure the quality of the product, if the demand is to be maintained and further developed. In order to have a strict quality control based on standard specifications, Indian Standards Institution has formulated and published following Indian Standards for canned peas, okra (*Bhindi*) and tomatoes:

(*a*) Specification for Canned Peas (IS: 3245-1965);
(*b*) Specification for Canned Okra (*Bhindi*) (IS:3246-1965); and
(*c*) Specification for Canned Tomatoes (IS:3248-1965).

In the preparation of these standards due consideration has been given to the provisions of the Prevention of Food Adulteration Act, 1954, and the Rules framed thereunder, and also the Fruit Products Order, 1955. However, these standards are subject to the restrictions imposed under these, wherever applicable.

Priced at Rs 3.50 each, copies of these standards, can be had from the offices of the Indian Standards Institution located at New Delhi, Bombay, Calcutta, Kanpur and Madras.

Bombay Provision Merchants' Association

The Bombay Provision Merchants' Association held their Annual General Meeting on 19th June, 1966, at Bombay and

have passed the following resolutions unanimously.

'This Annual General Meeting of the Bombay Provision Merchants' Association accepts the devaluation of rupee as a *fait accompli* and pledges its wholehearted support to hold the price line and to see that the devaluation is worked successfully to strengthen the national economy.

The member establishments of this Association which occupy respected position of long standing in the retailing trade or provisions, toileteries, drugs and other essential consumer products in this Great City of Bombay hereby agree to hold the price line and strictly follow the consumer retail prices recommended by the manufacturers, which they have been doing all these years.

This Meeting feels concerned regarding the reported decision of the Government to open Government departmental stores and consumers' cooperative stores with the avowed object to hold the price line and to make available to the consumer, consumer products at reasonable prices. This move, the Meeting feels, is premature and ill-conceived. It would harm the distributive system so well established and would endanger the livelihood of many a small retailer.

The establishments of the members of the Association are at the disposal of the Government to sell the consumer products at prices recommended by the manufacturers.

The Meeting, therefore, strongly urges upon the Government not to open the Departmental Stores and thus endanger the livelihood of thousands of retailers'.

'Resolved that the above resolution be sent to concerned authorities and press'.

Development of fruit preservation industries in Rajasthan—Open House Technical Discussion

The 'Open House Technical Discussion' on scope of development of fruit preservation industries in Rajasthan was held on the 12th May, 1966, from 3.00 p.m. to 6.00 p.m., in the Government Hostel, Mirza Ismail Road, Jaipur. Shri Samrath Raj, Adviser to Rajasthan Rajya Kraya Vikraya Sangh, Jaipur, presided over the function. The participants included representatives from Central and State Governments; Research and Development; Quality Control; Cooperative Banks and Financial corporations; Health Department; Municipal Corporation, Jaipur; Public Health Research Institute, Jaipur; fruit and vegetable processing factories and cold storages; food technologists; horticulturists and businessmen.

Dr V. P. Maheshwary, Dy-Director Incharge of the Small Industries Service Institute, Rajasthan, welcomed the gathering. He pointed out that there is an ample scope for the development of fruit and vegetable processing industry in Rajasthan. At the outset he reviewed the activities, programme and progress of the Institute. Shri O. P. Gera, Asst. Director, Fruit Preservation, presented his paper. He stressed the importance of fruit and vegetable industry in the country's economy. He presented statistical data on production of fruit and vegetable products in U.S.A., U.K., West Germany, etc., India and particularly of Rajasthan. He dealt with the future scope of the industry in the State and invited suggestions to develop the industry on a sound footing.

Shri Daya Nand, Senior Marketing Officer, Directorate of Marketing and Inspection, Nagpur, stated that a target of 1,55,000 tonnes of processed fruit and vegetable products has been fixed for the country for the Fourth Five Year Plan period, out of which 10,000 tonnes have

been earmarked for exports. Rajasthan can play a very important part in the development of this industry. He explained the incentives given by the Government to encourage exports. Shri Daya Nand stated that all efforts are being made to procure tinplate for the industry from free currency rupee payment area and from the internal production from Hindustan Steel Limited, Rourkela. The sugar supply position has eased considerably. He strongly recommended for setting up Orange Concentrate Plant at Sriganganagar in consultation with Punjab Government.

A very lively discussion followed. The following recommendations were made:

1. Adequate supply of sugar and tin containers.
2. Concession in railway freight, octroi duties and sales tax.
3. Prompt inspection and licensing of new units.
4. Adequate power supply.
5. Training facilities.

F.P.O. News

Contracts Placed by the Chief Director of Purchase, Ministry of Food and Agriculture (Government of India), New Delhi.

(Orders of less than Rs 2,000 in value are not included).

Sl. No.	Tender No. and Article	No. or quantity (tonnes)	Value of Contract (Rs)	Name of contractor	Imported or Indigenous	Terms of Delivery [F.O.R.]
1	5/14/1/1433/65-Pur-V dt. 3-11-65					
	(1) Canned Ham	4.320	40,953.60	The U.P. Govt. CDF, Aligarh	Indigenous	...
	(2) Canned Sausages	4.320	22,809.60	The U.P. Govt. CDF, Aligarh	,,	...
2	9/2/1434/65-Pur-V dt. 3-11-65 Whole Milk Powder	275	19,18,125	M/s. The Hindustan Lever Ltd., P.O. Box 734, New Delhi	,,	
3	5/15/1/1435/65-Pur-V dt. 3-11-65 Canned Bacon	4.629	33,143.64	The U.P. Govt. CDF, Aligarh	,,	
4	13/1/1/1466/65-Pur-V dt. 24-11-65 Egg Powder	1	27,000	The Central Food Technological Research Institute, Mysore	,,	
5	9/2/1465/65-Pur-V dt. 22-11-65 Whole Milk Powder	200	14,20,000	M/s. The Kaira Dist. Coop. Milk Producers, Union Ltd., Anand	,,	
6	5/4/A/65-Pur-VI dt. 14-10-65 Tinned Potatoes	30-000	46,800	M/s. H. A. Rahim & Co., Rajbagh	,,	Ex-Factory
7	5/2/41/65-Pur-VI dt. 22-10-65 Baked Beans in Tomato Sauce	5-000	10,150	M/s. Dyer Meakin Breweries Ltd., Ghaziabad	,,	Sahibabad
8	5/2/41/65-Pur-VI dt. 19-10-65 Tomatoes Canned	5-000	14,000	M/s. Dr. Writer's Chocolates and Canning Co., Dadar, Bombay	,,	Wadi Bunder
9	5/2/41/65-Pur-VI dt. 19-10-65 Baked Beans in Tomato Sauce	15-000	30,750			
10	5/2/41/65-Pur-VI dt. 19-10-65 Tomatoes Canned	45-000	1,26,000	M/s. The Nagpur Orange Grower's Coop. Assn. Ltd., Nagpur	,,	Nagpur
11	5/4/34/65-Pur-VI dt. 8-11-65 Tinned Potatoes	10-000	18,900	M/s. The Midland Fruit and Vegetable Products (I), New Delhi	,,	Mathura
12	5/4/34/65-Pur-VI dt. 8-11-65 Tinned Potatoes	10-000	18,900	M/s. The Tims Products Ltd., P.O. Belgharia	,,	Belgharia
13	5/4/34/65-Pur-VI dt. 8-11-65 Tinned Potatoes	10-000	18,900	M/s. The New Swadeshi Sugar Mills Ltd., Allahabad	,,	Bamrauli
14	5/1/5/66-Pur-VI dt. 25-10-65 Pineapple Tinned	25-000	81,000	M/s. The Canning Industries (Cochin) Ltd., Trichur	,,	Trichur
15	5/1/5/66-Pur-VI dt. 25-10-65 Pineapple Tinned	20-000	65,000	M/s. Darlco Canning Ltd., Moosapet Road, Trichur	,,	,,
16	5/1/5/66-Pur-VI dt. 25-10-65 Pineapple Tinned	17-500	56,000	M/s. The Kaycee Plantations and Cannings, Trichur	,,	,,

Sl. No.	Tender No. and article	Qty. or No. (tonnes)	Value of contract (Rs)	Name of contractor	Imported or Indigenous	Terms of Delivery [F.O.R.]
1	5/3/18/65-Pur-VI dt. 24-12-65 Mango Jam	4–896	12,192	M/s. The Midland Fruit and Veg. Products (I), New Delhi	Indigenous	Mathura
2	5/11/465-Pur-VI dt. 15-11-65 Raspberry Jam	1–000	2,490	,,	,,	,,
3	5/4/35/65-Pur-VI dt. 7-12-65 Tinned Potatoes	25–000	42,750	M/s. Canning Industries Cochin Ltd., Trichur	,,	Trichur
4	5/7/2/65-Pur-VI dt. 4-1-66 Dehydrated Cabbage	1–000	10,390	M/s. Midland Fruit and Veg. Products (I), New Delhi	,,	Mathura
5	5/7/2/66-Pur-VI dt. 4-1-66 Dehydrated Okra	5–000	59,950			
6	5/7/2/66-Pur-VI dt. 4-1-66 Dehydrated Carrots	10–000	1,13,7000			
7	5/11/2/65-Pur-VI dt. 15-11-65 Peas in brine	20–000	43,800	M/s. Nector Canned Foods Pvt. Ltd., Bhadri	,,	Bhadri
8	5/11/2/65-Pur-VI dt. 15-11-65 Cauliflower in brine	25–000	67,250	M/s. New Swadeshi Sugar Mills Ltd., Allahabad	,,	Bamrauli
9	5/11/2/65-Pur-VI dt. 15-11-65 Cabbage in brine	30–000	74,700	M/s. Tims Products Ltd., Belgharia	,,	Belgharia
10	5/11/1/65-Pur-VI dt. 3-11-65 Cauliflower in brine	4–000	10,760	M/s. D & P Products Pvt. Ltd., Bombay	,,	Wadi Bunder
11	5/11/4/65-Pur-VI dt. 15-11-65 Orange Marmalade	4–962	12,159	M/s. Satish & Co., New Delhi	,,	Delhi
12	5/4/25/65-Pur-VI dt. 6-12-65 Potatoes Td.	25–000	43,000	M/s. The Mysore Fruit Products Ltd., Bangalore	,,	Bangalore
13	5/4/35/65-Pur-VI dt. 3-12-65 Potatoes Td.	200–000	3,46,000	M/s. D and P Products Private Ltd., Bombay	,,	Wadi Bunder
14	4/5/35/65-Pur-VI dt. 7-12-65 Potatoes Td.	100–000	1,71,000	M/s. Canning Industries (Cochin) Ltd., Trichur	,,	Trichur
15	5/4/36/65-Pur-VI dt. 13-12-65 Potatoes Td.	2–070	3,912	,,	,,	,,
16	5/11/4/65-Pur-VI dt. 15-11-65 Orange Marmalade	6–439	16,612	M/s. Midland Fruit and Veg. Products (I), New Delhi	,,	Mathura
17	5/11/4/65-Pur-VI dt. 15-11-65 Mango Jam	4–000	9,960	,,	,,	,,
18	5/11/4/65-Pur-VI dt. 15-11-65 Peaches Jam	5–000	12,050	M/s. Dyer Meakin Breweries Ltd., Mohan Nagar, Ghaziabad	,,	Ghaziabad

Sl. No.	Tender No. and article	Qty. or No. (tonnes)	Value of contract (Rs)	Name of contractor	Imported or Indigenous	Terms of Delivery [F.O.R.]
19	5/1/3/66-Pur-VI dt. 24-12-65 Pineapple Tinned	41-500	1,47,325	M/s. Darlco Cannings Ltd., Trichur	Indigenous	Trichur
20	5/1/8/66-Pur-VI dt. 24-12-65 Pineapple Tinned	40-000	1,42,000	M/s. Canning Industries (Cochin) Ltd., Trichur	,,	,,
21	5/5/2/66-Pur-VI dt. 15-1-66 Dehydrated Onions	20-000	1,64,000			
22	5/5/2/66/Pur-VI dt. 15-1-66 Dehydrated Onions	25-900	2,12,380			
23	5/5/2/66-Pur-VI dt. 15-1-66 Dehydrated Onions	26-000	2,13,200			
24	5/7/2/66-Pur-VI dt. 4-1-66 Dehydrated Cabbage	1-000	10,390			
25	5/7/2/66-Pur-VI dt. 4-1-66 Dehydrated Carrot	18-000	2,04,660			
26	5/7/2/66-Pur-VI dt. 4-1-66 Dehydrated Okhra	1-660	19,903			
27	5/2/47/65-Pur-VI dt. 31-12-65 Carrots in brine	5-000	7,450	M/s. Midland Fruit and Vegetables Products (India), New Delhi 13	,,	Mathura
28	5/2/47/65-Pur-VI dt. 31-12-65 Carrots in brine	7-500	11,175			
29	5/2/66/65-Pur-VI dt. 27-12-65 Baked Beans in Tomato Sauce	6-668	16,303			
30	5/2/45/65-Pur-VI dt. 29-12-65 Carrots in brine	32-000	43,960			
31	5/2/46/66-Pur-VI dt. 27-12-65 Carrots in brine	20-000	41,240			
32	5/2/45/65-Pur-VI dt. 29-12-65 Baked Beans in Tomato Sauce	13-156	39,762			
33	5/2/45/65-Pur-VI dt. 29-12-65 Carrots in brine	32-000	43,960			
34	5/2/45/65-Pur-VI dt. 27-12-65 Baked Beans in Tomato Sauce	44-349	1,02,446			
35	5/2/43/65/-Pur-VI dt. 22-12-65 Baked Beans in Tomato Sauce	25-000	56,250	M/s. Dr. Writer's Chocolates and Cannings Co. Ltd., Bombay	,,	Wadi Bunder
36	5/1/20/65-Pur-VI dt. 4-1-66 Guava Tinned	20-000	45,500	M/s. Spencer & Co., Delhi	,,	Kanpur
37	5/2/46/65-Pur-VI dt. 27-12-65 Baked Beans in Tomato Sauce	6-666	15,398	,,	,,	,,

Sl. No.	Tender No. and article	Qty. or No. (tonnes)	Value of contract (Rs)	Name of contractor	Imported or Indigenous	Terms of Delivery [F.O.R.]
38	5/2/44/65-Pur-VI dt. 23-12-65 Baked Beans in Tomato Sauce	6-500	14,820	M/s. Spencer & Co., Delhi	Indigenous	Kanpur
39	5/2/46/65-Pur-VI dt. 22-12-65 Carrots in brine	26-900	41,340	,,	,,	,,
40	5/2/46/65-Pur-VI dt. 22-12-65 Tomatoes Canned	50-000	1,32,500	M/s. Nagpur Orange Growers' Co-operative Association Ltd., Nagpur	,,	Nagpur
41	5/2/44/65-Pur-VI dt. 22-12-65 Tomatoes Canned	24-000	63,600	,,	,,	,,
42	5/1/22/65-Pur-VI dt. 7-1-66 Guava Tinned	16-531	37,195	M/s. The New Swadeshi Sugar Mills Ltd., Allahabad	,,	Bamrauli
43	5/2/46/65-Pur-VI dt. 27-12-65 Carrots in brine	26-000	41,349	,,	,,	,,
44	5/2/46/65-Pur-VI dt. 23-12-65 French Flat Beans	10-000	21,500	M/s. The Pure Products and Madhu Canning Private Ltd., Bombay 71	,,	Bombay
45	5/2/46/65-Pur-VI dt. 23-12-65 Kundri in brine	30-000	51,000	,,	,,	,,
46	5/1/21/65-Pur-VI dt. 31-12-65 Papaya Tinned	2-014	6,546			
47	5/2/46/65-Pur-VI dt. 25-12-65 Baked Beans in Tomato Sauce	6-666	15,399	M/s. The Tims Products Ltd., Belgharia, 24 Parganas	,,	Belgharia
48	5/2/46/65-Pur-VI dt. 25-12-65 Carrots in brine	22-000	34,980			
49	5/4/2/66-Pur-VI dt. 17-1-66 Potatoes Tinned	10-000	16,700	M/s. The Dyer Meakin Breweries Ltd., Ghaziabad	,,	Sahibabad
50	5/2/47/65-Pur-VI dt. 31-12-65 Karela	6-000	11,100	,,	,,	,,
51	5/5/2/66-Pur-VI dt. 15-1-66 Dehydrated Onion	2-000	16,000	M/s. Miki Food Products, Meerut	,,	Meerut
52	5/7/2/66-Pur-VI dt. 4-1-66 Dehydrated Carrots	2-000	22,500	,,	,,	,,
53	5/7/2/66-Pur-VI dt. 3-1-66 Potatoes Dehydrated	6-000	46,800	The Director, Central Food Technological Research Institute, Mysore	,,	Mysore

Export News

- *List of events included in the approved programme of participation in International Fairs/Exhibitions and organisation of Indian exhibits abroad for 1966-67*
- *Show-rooms at important trade centres abroad*
- *Inspection of exportable goods*
- *Record of Spices in 1965*
- *Parties interested in the import of foodstuff from India*

List of events included in the approved programme of participation in International Fairs/Exhibitions and organisation of Indian Exhibits Abroad for 1966-67.

EASTERN EUROPE

1. Budapest International Fair, Budapest (Hungary), 20th to 30th May, 1966.
2. Zagreb International Autumn Fair, Zagreb (Yugoslavia), 8th to 18th September, 1966.
3. 22nd International Fair, Plodiv (Bulgaria), 18th September to 2nd October, 1966.
4. Leipzig Spring Fair, Leipzig (GDR), 5th to 14th March, 1967.

WESTERN EUROPE

1. Hanover Industries Fair, Hanover (W. Germany), 30th April to 8th May, 1966.
2. 18th Handicrafts Fair, Munich (W. Germany), 12th to 22nd May, 1966.
3. Izmir International Fair, Izmir (Turkey), 20th August to 20th September, 1966.
4. Brussels Food and Domestic Equipment Fair, Brussels (Belgium), 8th to 23rd October, 1966.
5. Paris Food Fair, Paris (France), 13th to 21st November, 1966.

WEST ASIA

1. Damascus International Fair, Damascus (Syria), 25th August to 20th September, 1966.

AUSTRALASIA

1. 7th Biennial Sydney International Engineering and Industrial Exhibition, Sydney (Australia), 15th to 20th August, 1966.

AMERICA

1. 8th U.S. World Trade Fair, San Francisco (U.S.A.), 12th to 22nd May, 1966.
2. British Columbia International Trade Fair, Vancouver (Canada), 17th to 27th May, 1967.

AFRICA

1. Tanganyika Trade and Agriculture Fair, Dar-es-Salaam (Tanzania), 1st to 7th July, 1966.
2. Royal Agriculture Show, Nairobi (Kenya), End September/October, 1966.
3. Exclusive Indian Exhibition, Lagos (Nigeria), (Approx. February, 1967).

Special events included in the approved programme of 1966-67 and 1967-68

1. ECAFE Asian Trade Fair, Bangkok (Thailand), 17th November to 10th December, 1966.
2. Universal and International Exhibition (EXPO67), Montreal (Canada), 28th April to 27th October, 1967.
3. Setting up of an Export Products Pavilon in the Indian International Trade and Industries Fair, Madras, 22nd January to 27th February, 67.

Show-rooms at important trade centres Abroad

The Government of India is already maintaining 15 show-rooms/trade centres and 6 show-cases/show-windows abroad (as per list below) for providing visual com-

mercial publicity to various Indian merchandise. The State Trading Corporation of India is maintaining show-rooms at Rotterdam (The Netherlands) and Moscow (U.S.S.R.) and Handicrafts and Handlooms Export Corporation of India is maintaining a show-room-cum-retail shop in New York.

The State Trading Corporation of India is proposing to open a third show-room at Montreal (Canada) this month and the Handicrafts and Handlooms Export Corporation proposes to open a new show-room-cum-retail shop at Paris during this year. Further, Government of India have also decided to participate in the 'Plaza of Nations' World Trade Centre, New York, which will come up in 1968.

As a measure of export promotion, the Ministry also recommends to the Reserve Bank of India release of foreign exchange to businessmen for their travel abroad. All legitimate requests are acceded to the extent practicable. Further relaxation in this regard as well as the opening of new show-rooms could be considered when the foreign exchange position improves.

List of existing Indian Trade Centre/Show-rooms/Show-windows and Show-cases abroad as on 1-3-1966.

Trade Centre

1. Cairo (Egypt)

Show-rooms

2. Bangkok (Thailand)
3. Baghdad (Iraq)
4. Bahrain (Persian Gulf)
5. Beirut (Lebanon)
6. Colombo (Ceylon)
7. Djakarta (Indonesia). Proposed to be closed on the 1st April, 1966 as a measure of economy.
8. Jeddah (Saudi Arabia)
9. Karachi (Pakistan). Proposed to be closed down on the 1st April, 1966 as a measure of economy.
10. Kabul (Afghanistan)
11. Nairobi (Kenya)
12. Teheran (Iran)
13. Khartoum (Sudan)
14. Lagos (Nigeria)
15. Manila (Philippines)

Show-windows and Show-cases in the premisses of Indian Missions abroad:

London (U.K.)
Vienna (Austria)
Sydney (Australia)
Madrid (Spain)
Mexico (South America)

Inspection of Exportable Goods

The following statement was made by Shri Manubhai Shah, Minister of Commerce, in reply to a question in the Lok Sabha on the 18th March, 1966:

The Government of India has established, with effect from 1st February, 1966, five Export Inspection Agencies for quality control and inspection of exportable commodities, as may be notified by the Government of India from time to time. These Agencies have been set up under section 7 of the Export (Quality Control and Inspection) Act, 1963, and are located at Madras, Cochin, Bombay and Union territories shown against each:

Name of Agency	*States/Union Territories*
1. Export Inspection Agency, Cochin	Kerala and Mysore.
2. Export Inspection Agency, Madras	Andhra and Madras.
3. Export Inspection Agency, Calcutta	Assam, Bihar, Manipur, Nagaland, NEFA, Orissa, Tripura and West Bengal.
4. Export Inspection Agency, Bombay	Gujarat, Goa and Maharashtra.
5. Export Inspection Agency, Delhi	Delhi, Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh.

These Agencies have been established to supplement the work of other existing inspection agencies.

Record Exports of Spices in 1965

India exported 57,081 tonnes of spices valued at Rs 20.2 crores during 1965 as against 53,788 tonnes valued at Rs 15.9 crores exported during 1964. This increase was in respect of black pepper, cardamom, turmeric, ginger and minor spices like cumin seed, fennel seed, fenugreek seed, celery seed, garlic, tikipat, cassia and curry powder while earnings from chillies, mace and coriander showed a decline.

The exports of black pepper rose from 16,000 tonnes valued at Rs 5.6 crores during 1964 to over 23,000 tonnes valued at Rs 9.8 crores in 1965, which is a record for pepper exports since 1956. The U.S.A., U.S.S.R. and other East European countries accounted for 26 per cent (Rs 2.5 crores), 25 per cent (Rs 2.48 crores) and 19 per cent (Rs 1.93 crores) respectively of the total exports of pepper in 1965.

Parties interested in the import of foodstuffs from India

1. M/S Kuhlmann, Luckau, Merten, GmbH u. Co. KG., Munich 8, Wagenbauerstrasse 6, W. Germany.
2. Ets. Rousseau Rue, du Lundi, Carpentras (Vauclauses), France.
3. Ets. Barbier & Dauphin, Place Jeanne D8Arc, Aix en Provence, France.
4. Ets. PROMar, 15-31, Rue Ste Beaune, Marseille, France.
5. Ets. Lamourux, 3, Rue Esperandieu, Nimes (Gard), France.
6. Ets. Sadiam, 24, Rue due Jardin des Plantes, Marseille.
7. G. Benezet, Route de Montpellier, Nimes (Gard), France.
8. Menille & Cie, Le Puy-Ste Reparade (Bouches due Rhone).
9. Union des Co-operatives due Fruits & Legumes de Provence, Sain Chamas (Bouches due Rhone).
10. Ets. EMMOP, La Pomme, Marseille (Bouches due Rhone).
11. Ets. Faushon Place de la Madeleine, Paris, 8 eme.
12. S. A. Hediard, 21, Place de la Madeleine, Paris, 9 eme.
13. E. J. Baude de Bunnetat, 57 Rue du General de Gaulle, St. Leu-la-Forest (S & O).
14. Societes Party, 44 Rue de l'Aqueduc, Paris, 10 eme.
15. Ets. Loceds, 25 Rue D'Astorg, Paris.
16. Ets. A. Frappier, 21 Rue Baulin Montreuil, Paris.
17. Ets. R. Valentin, 29 RUE Mehul Pantin, Seine.
18. C. A. P., 29 Rue des Gardinoux, Aubervilliers (Seine).
19. G. Soreau & Cie (Importation), 16 Rue Dubronffaut, Paris, 12 eme.
20. O.R.A.C. 9 Rue Nicolas-Framel, Paris, 4 eme.
21. Ets. Hermant, 78, Rue du connetable, Chantily, Oise.
22. Ets. Lerebourg, Liverdun (Meyrthe-et. Moselle).
23. Produits due Dauphine et de Provence, Nyons (Drome).
24. Ets. Remade, 367 Adr. Ramade-Conserves-Carpentras.
25. Ets. Kinnel (S.A.R.L.), Metz-Ban-Saint-Martin (Moselle).

Foreign News

- *U. K.—Mobile swan-neck elevator-conveyor*
  - *Delivering measured quantities of powder and grain: up to 50 containers filled per minute*
  - *Automatic carton folding and gluing machine*
  - *New size grading machine: rapid change over to suit sorting requirement*
  - *Gold medal to advance filtration knowledge*
- *Switzerland—Schedule of the soft drinks regulations*
  - *Indian morels in Switzerland*
- *Sweden—Cardamoms*
- *France—Dried mushrooms*
  - *Seafoods*
- *U.S.S.R.—Special instructions to Indian exporters and shippers*
- *Australia—Demand for Australian powdered cheese grows*
  - *Australian black currants are vital source of vitamin C*
  - *Australia supplies black currants to world markets*
- *Saudi Arabia—Procedure for obtaining entry visas by the Bonafide India businessmen going to Saudi Arabia for promotion of trade*
- *Tanzania—India's participation in the national agriculture and trade fair, Dar-es-salaam*
- *Cambodia—Imports into Cambodia*
- *Nepal—Setting up of industries in Nepal with Indian collaboration*

U.K.

Mobile Swan-Neck Elevator-Conveyor

This simple mobile electrically driven swan-neck belt elevator-conveyor has been designed for the easy loading of lorries, through-transport containers and railway wagons from ground or other levels.

Being mounted on heavy duty solid rubber tyred castors it is easily moved by one man.

It is of perfectly standard type construction which allows it to be supplied in heights to suit the particular difference of level applying to the area in which it is to be used.

The belt itself runs over a series of free running rollers and has an easily adjustable tensioning device.

The belt surface is of standard grip type rubber.

It works off any standard 3 phase electric supply within the range of 380/440 volts, 50 c/s and is supplied complete with switchgear. Other electrical specifications can be catered for if required.

Further details may be obtained from British Automatic Conveyor and Equipment Co. Ltd., 41-42 Prescot Street, London E. 1, England.

Delivering measured quantities of powder and grain: Up to 50 Containers Filled per Minute

Sugar, grain, powdered chemical and pharmaceutical preparations or any free-flowing granular or powdered substance can be delivered in measured quantities of 1/8th oz. to 2 lb. (3.5 grammes to 1 kg.), at speeds of up to 50 deliveries per minute, by the 'Watford' Mark II Loose Filling Machine, now being manufactured and marketed throughout the world by *SOAG Machine Tools Ltd.*, Juxon Street, London, S.E. 11. The machine, which may be continuous in operation or may deliver when a foot or hand switch is pressed can be incorporated in existing conveyor lines and batch weighing systems.

The 'Watford' Mark II consists basically of a free-standing column 66 inches (1.68 m) high, to the front of which is attached a funnel-shaped hopper of 2200 cu. ins. (36051 cm^3) capacity. An auger, revolving

in the neck of the hopper and driven through a spindle by an electric motor in the head of the machine, meters the powder into containers placed on a table below. The height of the table can be adjusted for different sizes of container. The powder or grain is normally fed by hand into the hopper, but for long runs a secondary hopper is sometimes used to deliver the material automatically via a polythene tube down to the hopper on the machine.

Quantities varied without stopping machine

The amount delivered into each container and the frequency of delivery are determined by the size of spout on the base of the hopper; the size of auger used; the speed at which the auger revolves; and the nature of the material delivered. To change from one size of auger and spout to another takes less than five minutes. Since extremely small augers can be used, there is theoretically no lower limit to the amount which can be delivered other than that set by the nature of the powder itself. In practice, however, the lower limit is seldom less than 1/8th oz. (3.5 grammes). The upper limit is usually about 2 lb. (1 kg.). The augers supplied as standard with the machine measure ½ in., 1½ in., 2 in., and 2½ in. (12.7 mm., 38.1 mm., 50.8 mm. and 63.5 mm.).

In order to ensure that the amount delivered remains constant during a run, a small auger working at almost the maximum number of revolutions obtains the best results. The number of revolutions may be varied over a range of 6:1. This adjustment can be made without stopping the machine by simply turning a knob above the hopper. A calibrated scale, which moves when the knob is turned, gives the operator an indication of the relationship between auger revolutions and amount delivered.

The machine stands on a U-shaped pedestal 24 inches deep and 21 inches wide (61 cm ×53 cm). The standard electricity supply required is 230/250 volts or 150 volts.

Further information from: SOAG Machine Tools Ltd., Juxon Street, Lambeth, London, S.E. 11.

Automatic Carton Folding and Gluing Machine

Cartons with interlocking bottoms; with double walls; with single walls; and certain types of fold-in carton, together with a new type of carton consisting of a large and small container having the base and one side in common, can all be produced on the 'Hunter', an automatic carton folding and gluing machine manufactured and marketed throughout the world by *SOAG Machinery Company*, Transport Avenue, Brentford, Middlesex, England. The machine is capable of working at belt speeds of 850 feet per minute (250 metres/min.) which represents, for example, a production of one thousand five hundred cartons per minute from blanks 6 inches long (15 cm). Cartons from 1 inch to 14¾ inches (25 mm. to 374 mm.) wide (measured when folded flat) and from 2½ inches to 30 inches (64 mm. to 762 mm.) long can be produced. The maximum width of blank when opened out is 30 inches (762 mm.).

Short runs can be economically made because the change-over from one size or type of carton to another can be quickly made (often under 15 minutes) by handwheels and screw adjusters; no special tools are necessary. The machine occupies a floor area only 28 feet 5¼ inches × 4 feet 10 inches (8.67 m. × 1.47 m).

Choice of Gluing Units

The machine automatically pre-folds all four creases up to 180°, then glues and counts the cartons. The blanks are fed continuously from the bottom of the pile along rubber feed bands to a micrometer-adjusted feed mechanism, which prevents more than one carton from entering the machine simultaneously or leading edges from folding up. The space between cartons is adjustable while the machine is running because the main conveyor bands are made from a combination of natural fibre and nylon, they do not buckle and firmly support even flimsy and intricate cut-out cartons.

Two side plates, with rubber rollers set at 2½ inch (63 mm.) centres, hold the cartons

down firmly on either side during folding. The centre rails require no attention since the rollers are located by set screws around which they revolve on self-oiling bushes.

After the final folding operation, cartons pass between pressure rollers, then on to the slow running delivery conveyor. This conveyor has four speeds varied by a simple lever engagement which adjusts the delivery rate to allow the cartons a longer period of dwell in the pressure section—a particular advantage when using hot glue.

Further information from: SOAG Machinery Company, Transport Avenue, Brentford, Middlesex.

New Size Grading Machine: rapid change-over to suit sorting requirement

It takes only a few minutes to switch from size grading one commodity to another with the new Sortex 'Polygrada' Diameter Grader, manufactured by Gunson's Sortex Ltd., Bow, London, E. 3. A new system of inter-changeable decks, which can be easily removed or fitted, has been devised to reduce down-time on the machine to a minimum.

The Sortex Polygrada has no moving parts and is controlled by one knob. Special operator training is not necessary and it is claimed that the machine offers accurate and uniform grading without damage to delicate items. All parts are accessible, those in contact with the commodity being made of stainless steel. A machine can be coupled to an automatic feed and discharge system and can work independently or as part of a battery.

Previously, the time taken to re-set the deck for diameter grading each particular commodity could be twenty minutes or more for each change-over. Now this job can be down in readiness for the next production batch without the machine remaining idle —an important consideration where commodities on the production line frequently change.

Typical items handled include edible nuts, pharmaceutical tablets, pellets, seeds, sweets and industrial items. The throughput rate for one machine is 200—850 lb. (90—386 kilos) per hour, depending on the commodity.

The principle of diameter grading involves vibrating the commodity electromagnetically along stainless steel rails which diverge from the point the commodity enters to the point of discharge. There are four adjustable take-off points: narrow pieces are channelled away first while wider pieces pass further along the rails to be channelled away according to their diameter. This system gives four size separations.

Size grading machines are often used in conjunction with electronic machines which sort items by colour. Length graders are also available. They are an established method of separating batches of mixed-size commodity without using hand labour.

Specification

Diameter Range (adjustable): 0.1″ to 0.7″. (2.5 mm. to 18 mm.)

Power Input: 500 watts.

Overall Dimensions: Length 30″ (76 cm.)
Height 30″ (76 cm.)
Width 19½″ (50 cm.)

Net Weight: 271 lb. (127 kg.)

Further particulars: J. G. Miller, GUNSON'S SORTEX LTD., Fairfield Road, Bow, London, E. 3.

Gold Medal to Advance Filtration Knowledge

The Filtration Society is to award a gold medal to encourage the advancement of knowledge in industrial filtration and separation research, engineering and technology. The medal, with a cash prize, will be awarded every two years. It will be given to

the person presenting to the Society the most meritorious paper on filtration and separation. He or she need not be a member of the Society. All papers submitted for this year's award must be in the hands of the Society by 31st July. The award will be made at the Society's annual meeting on 18th October. Full details of the gold medal award can be obtained by writing to W. G. Norris, Hon. Secretary, Filtration Society, 1 Katherine Street, Croydon, Surrey.

SWITZERLAND

Schedule of the soft drinks regulations

++ obligatory + allowed (not obligatory) − prohibited
± not regulated • with declaration

Classification	Soft drinks containing fruit juice		Soft drinks not containing fruit juice
Description of soft drink	Verdunnter Trauben—und Kernobstsaft	Tafelgetrank mit Fruchtsaft	Limonade (Brause limonade)
Example	Verdunnter	Zitrone, Grape-fruit	Cola, Tonic, Himbeer
Additions	Traubensaft	Orange, Ananas	
Fruit juice			
Grape	min. 50%	min. 4%	
Apple	min. 50%	min. 4%	+
Apricot	±	min. 4%	
Strawberry	±	min. 4%	
Pineapple	±	min. 4%	
Raspberry	±	min. 4%	
Black currant	±	min. 4%	
Flavour			
(*a*) Natural: obtained from natural products	−	+	+
(*b*) Fruit extracts, fruit crush	+	+	+
(*c*) Artificial: identical to those found in nature	−	−	−
(*d*) Artificial: not found in nature	−	−	−
Sweetening matter			
(*a*) Sugar	+	+	+
(*b*) Corn Syrup	−	−	+
(*c*) Permitted artificial sweetening matter	−	−	+•
Acid			
(*a*) Organic — Citric acid	+	+	+
(*a*) Organic — Malic acid	+	+	+
(*a*) Organic — Tartaric acid	+	+	+
(*a*) Organic — Lactic acid	+	+	+
(*a*) Organic — Carbonic acid	+•	+•	++
(*a*) Organic — Ascorbic acid	±	±	±
(*b*) Mineral — Phosphoric acid	−	−	in cola drinks to pH 3.0

Classification	Soft drinks containing fruit juice		Soft drinks not containing fruit juice
Preservative			
(*a*) Sulphurous acid or ...	max. 40 mg./l	—	however, 500 p.p.m. fruit juice
(*b*) Benzoic acid or ...	—	—	,, 850 used +
(*c*) Sorbic acid or ...	—	—	,, 780 ,,
(*d*) Formic acid	—	—	,, 3000 ,,
Foaming agent			
Saponins	—	—	—
Others	—	—	—
Clouding agents			
Bromine containing ...	—	—	—
Free from bromine ...	—	—	—
Permitted colour	caramel only	+	+
Caffeine	—	—	from cola nut extracts only
Quinine (calculated as quinine hydrochloride 2 aq) ...	—	—	max. 80 mg./l*
Labelling			
Word suggestive of fruit ...	+	'Verdunnter Saft'*	+ 'Tafelgetrank'* + 'Mit . . . . Aroma'*
Pictorial device, suggestive of fruit		—	—

Ref: Naarden News

Indian Morels in Switzerland

A survey concerning the market for *Indian morels in Switzerland* by the Embassy of India, Berne, has revealed that there is a very good demand for Indian morels. Every effort should be made to produce it in larger quantities and to improve the trading methods. The prices should be more stable and uniform and the supplies should be continuous. The Swizz importers place greater importance on dealings with business partners in India on whom they can rely absolutely with regard to quantity, classification and terms of delivery.

SWEDEN

Cardamoms

Sweden is one of the world's largest importers of cardamom with *per capita* intake higher than almost anywhere else. Sweden generally imports 325 tons of cardamom per year for her baking industry, although the import was substantially lower in 1965. India used to be the largest supplier of this commodity to Sweden but has been losing ground to Guatemala. In 1965, India exported 64 tons of cardamom to Sweden while imports from Guatemala totalled 137 tons. There are no complaints regarding the quality of Indian cardamom. The main reason for the sharp fall in Indian exports is stated to be the price factor.

There are no restrictions on the import of cardamoms into Sweden. The rate of customs duty is SKr 100 on 100 Kilograms. The import statistics in respect of cardamom are given below:

	1964		1965	
	Qty. Tons	Value '000 SKr	Qty. Tons	Value '000 SKr
Total Imports	329	4,997	216	4,529
India	217	3,309	64	1,408
Guatemala	96	1,499	137	2,801
Tanzania	14	161	9	171
U.S.A.	-	-	6	110

(Re. 1=SKr. 1.11)

FRANCE

Dried Mushrooms

France has a good market for *dried mushrooms*, but the value of India's exports during the year ending December 1965 was only Frs. 160,000, as compared with 600,000 imported from Pakistan. The comparative low offtake of Indian dried mushrooms is due to somewhat inferior quality resulting from higher moisture content and higher prices. Under the Indo-French Trade Protocol, there is a quota of Frs. 1 million for the import of dried mushrooms. There is great scope for stepping up India's exports, provided the quality is assured and frequent fluctuations in price quoted by various exporters could be avoided. The price acceptable to the French importers is around Sh. 120/kilo.

Seafoods

Imports of canned prawns and shrimps from India into France during January—October, 1965, have shown a remarkable improvement over actual imports for the corresponding period in 1964.

January-October 1964		*January-October 1965*	
Qty. (Kg.)	*Value (Rs)*	*Qty. (Kg.)*	*Value Rs*
1,514	15,750	195,297	1,897,268

Exports of frozen prawns, too, have shown an improvement as indicated below:

9	50	4,066	37,060

France has been the second largest importer of canned prawns and shrimps from India, and if exports have not increased further it is because of inadequate supply position in India to meet the growing French demand.

U.S.S.R.

Special Instructions to Indian Exporters and Shippers

Indian exporters and shippers are advised to pay special attention to the following points in connection with their exports to Soviet Union to ensure that the clearance of their goods is not delayed in Soviet ports:

(*i*) A copy of the relevant bill of lading should be handed to the master of the vessel. The Soviet foreign trade organisations have pointed out that in a number of cases the goods arrive in the Soviet ports without the relevant bills of lading and as a result, considerable confusions and consequent delay result before the goods are cleared. It seems that the Indian parties usually send their bills of lading by post to the consignees in the Soviet Union and the documents reach Odessa port sometime after the relevant goods have actually landed.

(*ii*) All packages relating to one bill of lading should be stowed together in the ship. Mixing of goods relating to one bill of lading with goods relating to another bill of lading causes considerable difficulty and consequent delay in their clearance from Soviet ports.

(*iii*) Packages containing goods such as animal skins, raw wool, raw jute, etc., which are liable to quarantine inspection and fumigation at the

Soviet end, should not be stowed in the same hold as other goods specially eatable products. Lack of attention to this point may lead to fumigation and damage to the latter type of goods.

(*iv*) Strong packing material should be used in packing goods for export. Soviet foreign trade organisations have reported some instance in which the packing material had been torn broken in transit. This again leads to delay in clearance and subsequent movement within the Soviet Union as the Soviet railways refuse to accept responsibility for transport of goods which are not securely packed.

AUSTRALIA

Demand for Australian Powdered Cheese Grows

The demand for dry powdered cheese, manufactured in Australia, is growing rapidly.

Samples of this comparatively new product were first exported barely 12 months ago. Today the cheese is being exported in bulk packages of 56 lb. each.

It has proved especially popular in Singapore, Malaysia and Hong Kong.

Dry powdered cheese has an exceptionally long shelf life. It is used for a wide variety of purposes, including flavouring soups and sauces and other foods, and in biscuits, bread and pastries.

The processes used in the manufacture of dry powdered cheese were developed at the Dairy Research Division of Australia's Commonwealth Scientific and Industrial Research Organisation.

The CSIRO was set the task of drying cheese which had a high fat content. Industry had tried many ways of doing this but each had been unsuccessful, the cheese particles sticking together once the fat was melted by heat.

The CSIRO studied the behaviour of the fat in the cheese at different temperatures and under partial vacuum conditions. After many experiments, they found that high-protein cheese did not exude fat when treated in a stream of hot air.

They also found that high fat content cheese, such as cheddar, could be dried quickly at high temperatures if protein in the form of non-fat milk solids were added to the cheese.

The experiments showed that when spray-dried skim milk powder, dried whey or dried butter milk powder was added to grated cheese, the cheese particles did not stick together.

Two commercial plants based on this principle were designed by the CSIRO and installed in cheese factories.

In both these plants, grated cheese is mixed with skim milk powder. This is then placed in a rotary drying drum fitted with perforated vanes through which hot air passes, drying the cheese. The final product emerges as a dry, coarse product which is then ground into powder.

Much of the dry powdered cheese exported in bulk is repacked in smaller quantities for distribution.

Australian Black Currants are vital source of Vitamin C

Australian black currants are recognised throughout the world as one of nature's richest sources of vitamin C (Ascorbic Acid), which is essential for the development and maintenance of good health.

Over recent years, the demand for this valuable small berry fruit has grown significantly, and today the Australian output is keenly sought on many international markets.

Britain, for example, is particularly conscious of the dietary value of black currants, and in the year ending June 30, 1965, bought fruit pulp and juice from Australia to the value of $A 140,000.

Other countries which bid for the Australian crop include South Africa, Thailand, Hong Kong and Malaysia.

The world awareness of the value of black currants as a source of vitamin C developed during the Second World War when food shortages forced countries to concentrate on growing crops with the greatest possible nutriment.

Bio-chemists found that not only were black currants extremely rich in vitamin C but the form in which it existed in the berry enabled the acid to be absorbed rapidly in the digestive system.

Vitamin C has long been acknowledged as vital to the healthy development of capillary blood vessels, tooth dentine, cartilage and connective tissue.

It assists in the conversion of folic acid into folinic acid, essential to normal metabolism, and also plays a key role in the absorption of iron in the intestinal tract.

In the post-war years, the increasing demand for black currants as a source of vitamin C turned the spotlight on the Australian black current industry, which is situated in the island state of Tasmania where climatic conditions are ideal for the berry's propagation.

Most of the black currant crop is grown within a 30-mile radius of the state capital, Hobart, famous for its natural deep-water port.

The fruit is harvested during December, January and February and processed in modern factories in Hobart under the strictest conditions of hygiene.

From the time the black currants enter the factories until they emerge packed in tins or bottles as fruit pulp or juice, constant precautions are taken to ensure that the vitamin C content is not affected by either contamination with alkali or oxidation through prolonged contact with air or by undue heat.

The high regard in which Australian black currant pulp and juice is held internationally is evident from current export statistics. Of the 3,000,000 lb. 1964-65 crop, some 675,750 lb. of fruit pulp, valued at $A 131,994, and 33,682 gallons of juice, valued at $A 105,604 went to overseas buyers.

Australia supplies Black Currants to World Markets

Australia has become a world supplier of black currants, renowned as a source of health-giving vitamin C (Ascorbic Acid).

The black currants, exported as fruit pulp, syrup and juice, are eagerly sought by Britain, South Africa, Malaysia, Hong Kong, Sarawak, Thailand and several other countries.

Black currants have always been regarded as a delicacy but only since World War II have they been recognised as one of nature's richest sources of vitamin C.

Vitamin C is absolutely essential for the promotion of health, especially in children. It helps build blood vessels, tooth dentine, cartilage, and tissue and is vital to normal cell growth.

The growing international demand for black currants has turned the spotlight on Australia's black currant industry in the island state of Tasmania—one of the few places in the world which is ideally suited for growing the berry.

Today Tasmania produces some 1,500 tons of black currants annually—about 99 per cent of the total Australian crop. These are grown within a 30-mile radius of the state capital, Hobart, famed for its natural deep-water port.

The fruit is harvested during December, January and February, and is processed

immediately in modern, hygienic factories in Hobart.

Black currant pulp is packed in bulk containers and cans while the syrup and juice goes into both cans and bottles.

In the year ending June 30,1965, Australia exported 675,750 lb. of black currant pulp valued at $A 131,994, and 33,682 gallons of syrup and juice valued at $105,604.

SAUDI ARABIA

Procedure for obtaining entry visas by the Bonafide Indian Businessmen going to Saudi Arabia for Promotion of Trade

The Embassy of India, Sulaiman Al-Turkey House, Al Sharafia Baghdadia, P.O. Box No. 952, Jeddah, has been frequently receiving requests from Indian businessmen and their representatives, wanting to visit Saudi Arabia, for a 'No Objection Certificate' to be obtained from the local Saudi Government in order to enable them to get entry visas for Saudi Arabia. Apart from the fact this is a time-consuming process, it is also rather unusual to approach the Foreign Ministry in every such case. While the Embassy of India is always willing to help Indian businessmen in securing the usual facilities for such visits, the proper procedure for obtaining entry visas is to apply to the Embassy of Saudi Arabia, 6 Hardinge Avenue, New Delhi.

TANZANIA

India's participation in the National Agriculture and Trade Fair, Dar-es-Salaam

The Government of India is organising India's participation in the forthcoming National Agriculture and Trade Fair scheduled to be held at Dar-es-Salaam from the 2nd to the 7th July, 1966.

India will set up a Pavilion at the Fair to give an extensive visual publicity to Indian goods abroad with special reference to Tanzania and adjoining territories. The intention is to build up and maintain a demand, not only of such Indian products as the country is now in a position to export but also to show the growing export potential of the country with a view to create a demand for goods which are likely to be ready for export in the near future. Trade publicity will be done through display and such ancillary measures as are found feasible to stimulate interest in Indian goods.

India has entered into a trade agreement for bilateral trade with Tanzania. In accordance with the trade agreement, the Government of Tanzania has promised to import India-made goods and materials mentioned in the Schedule attached to the Trade Agreement.

CAMBODIA

Imports into Cambodia

Consequent to nationalisation of Cambodia's foreign trade with effect from January 1, 1964, all *imports into Cambodia* are being effected by and in the name of a mixed Society, called the Naional Society for Exports and Imports, SONEXIM, whose office is at 18, M.V.P.B. Norodom, Phnom Penh, Cambodia.

Some of the pre-nationalisation importers and dealers have been affiliated and formed into thirteen professional groups corresponding to the various categories of goods they are entitled to handle. These members alone can place their demands through the respective Presidents and Secretaries of the group concerned to SONEXIM, which allots foreign exchanges from time to time for the financing of the proposed imports in consultation with other concerned authorities. Imports are made mostly on the basis of trade agreements existing between Cambodia and other countries. Sometimes SONEXIM also directly imports by inviting tenders.

It is advisable to address at the same time the respective President and the Secretary of firms of the group concerned. Since these firms and their addresses are likely to change from time to time, all communications may be addressed to the Presidents and Secretaries of the groups concerned, c/o Cahmbre Mixte de Commerce et d' Agriculture du Cambodge, 2, Vithei Baksei Chamkrong, Phnom Penh.

NEPAL

Setting up of industries in Nepal with Indian Collaboration

Shri Manubhai Shah, Minister of Commerce, made the following statement in the Rajya Sabha on 12th May, 1966.

'Six industries have so far been set up in Nepal with private Indian capital. Three of these have gone into production and the remaining three are under construction.

H.M.G., Nepal, have no share participation in these industries though loans to four of the undermentioned industries have been advanced by the Nepal Industrial Development Corporation:

Name of party	Total capital investment	Loan advanced by the Nepal I.D.C.
	(Rs lakhs—Nepal currency)	
M/s. Dhartidhan (P) Ltd., Nepalganj ...	16	9.12
M/s. Indo-Nepal Industrial Corpn., Simra ...	280	69
M/s. S. B. Tibrewala Cold Storage and Ice Making Plant ...	14	7.6
M/s. Ashoka Textiles (P) Ltd., Biratnagar ...	45	6.7

TRADE MARKS

Trade Marks accepted by the Trade Marks Registry

Name and address of Applicant	No. and Date of the Trade Marks Journal published the Trade Marks	Official No. of Trade Mark	Date	Products	Trade Mark
M/s. 1. Unilever Limited, Port Sunlight, Cheshire, England	404 1-4-1966	230,431	27-7-1965	Jellies, Jams, preserves, edible oils and edible fats	Betuwe (Class 29)
2. Swedish Beer Export Company Aktiebolag, Stampgatan 18, Goteborg, Sweden	404 1-4-1966	226,646B	18-1-1965	Beer, ale, lager and porter	Skol International Beer (Class 32)
3. P. Vencatachellum Condiments, No. 1, Broadway, Madras-1	405 16-4-1966	227,707	11-3-1965	Marmalades, jam and jellies	P. Vencatachellums (Class 29)
4. Hindustan Lever Limited, Backbay Reclamation, Bombay-1	406 1-5-1966	227,684B	10-3-1965	Meat, Fish, Poultry and game; meat extracts, preserved, dried and cooked fruits and vegetables; Jellies, jams, eggs, milk and dairy	Marva (Class 29)
5. Unilever Limited, Port Sunlight, Cheshire, England	406 1-5-1966	229,145B	27-5-1965	Meat, fish, food prepared from fish, poultry and game, meat extracts	Norda (Class 29)
6. Ajanta Dairy, Raja Mandi, Agra	407 16-5-1966	207,993B	19-3-1962	Milk Products	Ajanta (Class 29)
7. Shaver Poultry Breeding Farm Ltd., Galt, Ontario, Canada	407 ,,	220,995	2-3-1964	Poultry and eggs	Shaver Starcross (Class 29)
8. ,, ,,		220,996	2-3-1964	Poultry and eggs	Shaver Starbro (Class 29)
9. Duffymott Company, Inc., 370, Lexington Avenue City and State of New York, U.S.A.	407 ,,	227,128	10-2-1965	Canned and bottled fruits, vegetables, vegetable juices, soup, meat and fish	Figure Control (Class 29)
10. Unilever Limited, Port Sunlight, Cheshire, England	407 ,,	230,436	27-7-1965	Jellies, jams, preserves, edible oils and fats	Dronningholm (Class 29)
11. Manila Soft Drink, 155/C, Prince Golam Hossain Shah Road, Calcutta-32	407 ,,	230,979	26-8-1965	Aerated waters and non-alcoholic beverages (fruit juice)	Pumla (Class 29)
12. Kissan Products Limited, Old Madras Road, Bangalore-16	407 ,,	230,696	9-8-1965	Syrups and other preparations for making beverage	Kissan Syrup (Class 32)
13. Allen and Benson Company, 3/1, Mandeville Gardens Road, Calcutta-19	407 ,,	231,517	28-9-1965	Aerated waters and fruit juices all being non-alcoholic	No-cal (Class 32)

Government Notifications

- *Trade control—Imports*
- *Import of components, raw materials and spares etc., from the U.S. under U.S. AID non-project loan, 1966*
- *Sugar (control) Order, 1963: Fixation of price of Indian sugar*
- *Export of mango slices in brine*
- *Cardamom Board*
- *Export of onions*
- *Devaluation of Rupee—Consequential increase in the Rupee Value of Import Licences*
- *Grant of entitlement licences against exports effected upto 5th June, 1966, under the erstwhile E.P. Schemes*
- *Devaluation of Rupee—Consequential increase in the Rupee Value of Import Licences*
- *Import policy for actual users for the year April, 1966—March, 1967—issue of advance licences of raw materials, components and spares*
- *Abolition of Export Promotion Scheme*
- *Devaluation of Rupee—Consequential increase in the Rupee Value of Import Licences*

Trade Control—Imports

Import of (*i*) fruits all sorts, excluding coconuts and cashewnuts, fresh dried, salted or preserved, n.o.s. and excluding Dates (S.No. 21 (*a*)/IV), (*ii*) Asafoetida (S. No. 31 (*b*)/V), (*iii*) Cumin seeds, and (*iv*) Medicinal herbs from Afghanistan during 1966-67 Trade Arrangement period.

The following Public Notice (No. 37-ITC (PN)/66 dated the 9th March, 1966) has been issued by the Government of India in the Ministry of Commerce:

Attention is invited to the Ministry of Commerce Public Notice No. 10-ITC (PN)/65 dated 23rd February, 1965* for import of commodities from Afghanistan into India and export of commodities other than 'Hides and Skins' from India to Afghanistan for purpose of counter-balancing imports by the Approved Importers and Afghan Government nominee firms during 1964-66 Trade Arrangement period.

Due to extension of the Indo-Afghan Trade Arrangement for a further period of one year, it has been decided that the import of commodities from Afghanistan (as detailed in Schedule A-annexure 1 to the above Public Notice) and export of commodities from India to that country (as detailed in Schedule B-annexure 1 to the above Public Notice) for the purpose of counter-balancing of imports by the Approved Importers and Afghan Government nominee firms (as defined in the said Public Notice) will be regulated during the Trade Arrangement period 1966-67 (starting from 1st February, 1966 and ending on 31st January, 1967) strictly in accordance with the policy and procedure and other terms and conditions as laid down in the Ministry of Commerce Public Notice No. 10-ITC (PN)/65 dated 23rd February, 1965. Import will be allowed upto a fixed monetary ceiling earmarked for that purpose.

It may be noted that for imports to be effected during the current Trade Arrangement period, the last date of fulfilment of export obligation upto 100 per cent will be 28th February, 1967.

It may also be noted that after issue of the initial permit, which will be on the same basis as indicated in para 7 of Ministry of Commerce Public Notice No. 10-ITC (PN)/65 dated 23rd February, 1965, the request for

* See *Indian Trade Journal*, dated the 6th March, 1965. Pages 1485-86.

issue of further permits will not be entertained if the importers fail to prove to the satisfaction of the licensing authorities that they have effected exports during the current period at least upto 60 per cent of the value of the permits already issued to them.

Import of Components, Raw Materials and Spares etc., from the U.S. under U.S. AID Non-Project Loan, 1966

The following Public Notice (No. 47-ITC (PN)/66 dated the 7th April, 1966) has been issued by the Government of India in the Ministry of Commerce:

Attention is invited to Ministry of Commerce Public Notice No. 45-ITC (PN)/66 dated the 5th April, 1966, setting out the terms and conditions applicable to licences issued for imports under the U.S. Agency for International Development Non-Project Loan, 1966. In order that the loan may be utilised speedily and effectively within its limited validity period, it has been decided that ad hoc licences will be granted for import of components, raw materials, spares etc. under U.S. AID Non-Project Loan, 1966, in the manner indicated below:

(A) Eligible Units—Actual Users engaged in industries specified in Annexure I (not printed) (list of eligible industries) to this Public Notice both in the scheduled and non-scheduled sectors including small scale industries, will be eligible to apply, provided the total value of the A.U. licences obtained by the applicant for the period April, 1964—March, 1965, under U.S. AID and/or free foreign exchange was not less than Rs 5,000.

Note: In computing the total value of the licences for the period April, 1964—March, 1965, for the purpose of eligibility, the A.U. licences under U.S. AID Loan or Free Foreign Exchange issued by the D.O. (Tools), Directorate General of Technical Development, New Delhi, will also be taken into account. The following licences will be excluded while computing the total value:

(*i*) Licences for Capital Goods whether under Free Foreign Exchange or U.S. AID or any other Credit.

(*ii*) Licences issued on the recommendations of the Directorate General of Supplies and Disposals, or Railways whether under Free Foreign Exchange or U.S. AID or any other Credit.

(*iii*) Licences issued by and from Steel Controller or his Regional Offices whether under Free Foreign Exchange or U.S. AID or any other Credit.

(*iv*) Licences issued for imports from Rupee Payment Countries including licences for Capital Goods.

(*v*) Licences issued against Credits other than U.S. AID.

Note 2: Actual Users engaged in industries other than those specified in Annexure I to this Public Notice will not be eligible.

(B) Eligible Items—The licences to be issued in each case will cover only those items which were authorised for import under the relevant A.U. licences (U.S. AID and/or Free Foreign Exchange) issued to the party for the period April, 1964—March, 1965 and computable as per caluse (A) above provided those items figure in Annexure II (not printed) (list of eligible items) to this Public Notice and are not banned under the current import policy.

Note: If the relevant licences for the period April, 1964—March, 1965, covered steel items as well, the licences to be issued will also be valid for import of steel items permissible under the current policy and will be endorsed to that effect.

(C) Value of the Licences:

(*i*) In the case of Small Scale Units, the value of the licences to be issued to each Unit will be calculated at fifty per cent of the total value of the A.U. licences obtained by the Unit for the period April, 1964—March, 1965, under U.S. AID and/or Free Foreign Exchange as computed in terms of Clause (A) above. If the total value of the relevant licences as computed in terms of Clause (A) above, amounts to Rs 5,000 or more but less than Rs 10,000, the licence to be issued in such cases will be for a minimum value of Rs 5,000.

(*ii*) In the case of Units other than Small Scale Units, the value of the licences to be issued to each Unit will be calculated at 33½ per cent of the total value of the A.U. Licences obtained by the Unit, for the period April, 1964—March, 1965, under U.S. AID and/or Free Foreign Exchange, as computed in terms of Clause (A) above. If the total value of the relevant licences as computed in terms of Clause (A) above amounts to Rs 5,000 or more but less than Rs 15,000, the licence to be issued in such cases will be for a minimum value of Rs 5,000.

(D) Licensing Authorities—The licences to actual users borne on the registers of the Directorate General of Technical Development will be issued by the Chief Controller of Imports and Exports, New Delhi. The licences to actual users not borne on the registers of the Directorate General of Technical Development, including small scale units, will be issued by the concerned Regional Licensing Authorities.

(E) Application—Eligible units should apply direct to the concerned licensing authorities in the prescribed form and manner. It is not necessary to route the applications through the concerned sponsoring authorities or support the applications with essentiality certificates from those authorities. The application should, inter alia, be accompanied by the original Customs copies of the relevant licences for the period April, 1964—March, 1965, computable in terms of Clause (A) above together with the attested list of goods authorised under those licences (If the original customs copies and attested list cannot be produced for valid reasons, photostat copies thereof may be sent). Five copies of the above said list of goods authorised for import under the licences for the period April, 1964—March, 1965, should also accompany the application.

(F) First Come, First Served Basis—The licences will be issued by the concerned licensing authorities on the principle of 'First Come, First Served' against the A (II) bulk ceiling earmarked for the purpose. In other words so long as the ceiling permits and the applications are found in order, the licences will be issued in the order in which the applications are received. Applications received after 6th May 1966 will not be entertained. As the licences will be issued on the principle of 'First Come, First Served', it is in the interest of the applicant to submit their applications as early as possible.

(G) Conditions of Licences—The licences to be issued will be subject, inter alia, to the terms and conditions set out in Ministry of Commerce Public Notice No. 45 ITC (PN)/66 dated 5th April, 1966. As laid down in the aforesaid Public Notice, that licences will be under the Letter of Commitment Procedure which means that no remittance of foreign exchange will be allowed against the licence and payment has to be made to the U.S. Supplier in the manner prescribed under the procedure. The initial validity period of the licence will not be extended under any circumstances. The licences should, therefore, be utilised speedily, ensuring at the same time that the

terms and conditions of the licences are strictly complied with.

Sugar (Control) Order, 1963: Fixation of Price of Indian Sugar

The following Notification [G.S.R. 463 (No. 1 (2)/66 S.Py) dated the 24th March, 1966] has been issued by the Government of India in the Ministry of Food, Agriculture, Community Development and Co-operation (Department of Food):

In exercise of the powers conferred by sub-rule (3) of rule 125 of the Defence of India Rules, 1962, and clause 6 of the Sugar (Control) Order, 1963, and in supersession of the notification of the Government of India in the late Ministry of Food and Agriculture (Department of Food), No. G.S.R. 1145 dated the 6th August, 1965, the Central Government hereby fixes the price specified in column (2) of Schedule I as the maximum ex-factory price for Indian Sugar Standard (ISS) D-29 grade of sugar produced by all vacuum pan sugar factories situated in the areas specified in the corresponding entry in column (1) of the said Schedule that is to say, the factories specified in Schedule III (not published).

Provided that, the price differentials for various grades of sugar higher or lower than the ISS D-29 grade shall be as shown in Schedule II. Provided further, that where a sugar factory is situated at a distance exceeding 5 kilometres from the nearest railway station or an out-agency of the railway or from the godowns outside the factory not connected by rail, the producer may charge an additional one paise per quintal of sugar per kilometre beyond 5 kilometres of the distance between the sugar factory and such railway station or out-agency of the railway, in case of despatches by rail or between the sugar factory and such godowns in case of delivery ex-godowns.

SCHEDULE I

Area	Ex-factory price (Rs per Quintal)
1	2
East Uttar Pradesh	126.35
West Uttar Pradesh—	
(i) Factories mentioned in part A under "West Uttar Pradesh" in Schedule III	137.35
(ii) Factories mentioned in part B under "West Uttar Pradesh" in Schedule III	129.35
(iii) Factories mentioned in part C under "West Uttar Pradesh" in Schedule III	127.10
(iv) Factories mentioned in part D under "West Uttar Pradesh" in Schedule III	124.35
North Bihar	126.35
South Bihar	137.35
Punjab	137.35
West Bengal...	126.35
Assam	137.35
Orissa	131.35
Rajasthan	137.35
Madhya Pradesh	135.35
Gujarat—	
(i) Factories mentioned in part A under "Gujarat" in Schedule III	129.35
(ii) Factories mentioned in part B under "Gujarat" in Schedule III	124.35
Maharashtra	124.35
Mysore—	
(i) Factories mentioned in part A under "Mysore" in Schedule III	124.35
(ii) Factories mentioned in part B under "Mysore" in Schedule III	127.35
Andhra Pradesh	128.35
Kerala	131.35
Pondicherry	131.35
Madras	131.35

SCHEDULE II

The price differentials in paise per quintal for the various grades of sugar mentioned below shall, in relation to the basic grade, that is to say, the ISS D-29, be as under:

ISS Grade	*Paise per quintal*	*ISS Grade*	*Paise per quintal*
A-30, B-30 and C-30	+ 200	A-29, B-29 and C-29	+ 100
D-30	+ 85	D-29	—
E-30	+ 30	E-29	— 50
ISS Grade	*Paise per quintal*	*ISS Grade*	*Paise per quintal*
A-28, B-28 and C-28	—	A-27, B-27 and C-27	— 66
D-28	— 85	D-27	— 150
E-28	— 135	E-27	— 200

Export of Mango Slices in Brine

The following Trade Notice (No. G-53/66 dated the 18th May, 1966) has been issued by the Joint Chief Controller of Imports and Exports, Calcutta:

Reference this office Trade Notice No. G-9/65 dated the 16th January, 1965, on the above subject.

2. It is notified for the information of the trade that it has now been decided that the export of Mango Slices in Brine to the intending exporters will be allowed upto 66⅔ per cent of their export performance during the financial year 1965-66.

3. Exporters of Mango Slices in Brine who have exports during the financial year 1965-66 will be allotted quotas upto 66⅔ per cent of their export during that period. Intending exporters are advised to establish their exports during the above period with usual documentary evidence viz., Bills of Lading and Export Invoices along with a Statement in the proforma appended to this Trade Notice on or before the 15th June, 1966.

4. Applicants are to declare that no more than one application has been made by the applicant and/or their branches/Associate concerns having the same Incometax Verification Registration Exemption Number for a quota either at this port or any other ports.

5. Applications should be signed by the proprietor, partner or Manager, Director of the firm, or by any person duly authorised to sign any legal declarations on behalf of the firm. The position held by the person signing the application should be clearly stated.

Cardamom Board

The following Notification S.O. 1200 (No. F. 29 (21) Plant (B)/64—Cardamom Control) dated the 14th April, 1966, has been issued by the Government of India in the Ministry of Commerce:

In exercise of the powers conferred by sub-section (1), (3) and (4) of section 4 of the Cardamom Act, 1965 (34 of 1965) and of all other powers hereunto enabling the Central Government hereby establishes the Cardamom Board with effect from the 15th April, 1966, with headquarters at Ernakulam (Kerala State), consisting of the following persons, namely:

1. Shri P. S. Habeeb Mohamed, Chairman Rubber Board, Kottayam (Kerala State). (Chairman)
2. Director of Cardamom Development, Cardamom Board, Ernakulam (Kerala). (Member Ex-officio)
3. Shri K. Hanumanthaiya, 'Kengal Krupa', Bellary Road, Bangalore 6. (Member elected by the Lok Sabha)
4. Shri M. Malaichanmi, Chinnaumanaur P.O., Madurai Dist. (Member)
5. Shri Palat Kunhi Koya, K.M. House, Cannanore city. (Member elected by the Rajya Sabha)
6. Shri S. Banerjee, Deputy Secretary, Ministry of Commerce, New Delhi. (Member to represent the Ministry)
7. Chairman, Spices Development Council, c/o Ministry of Food, Agriculture Community Development and Co-operation (Dept. of Agriculture), New Delhi. (Member to represent the Ministry)
8. Shri R. Mahadevan, Deputy Secretary, Ministry of Finance (Commerce Division), New Delhi. (Member to represent the Ministry of Finance)
9. Agricultural Production Commissioner and Secretary to the Govt. of

Kerala, Agri. and Rural Development Dept., Trivandrum. (Member to represent the Govt. of Kerala)

10. Secretary to the Government of Mysore, Dept. of Agriculture and Forest, Vidhana Soudha, Bangalore 1. (Member to represent the Govt. of Mysore)
11. Director of Agriculture, Government of Madras, Chepauk, Madras 5. (Member to represent the Govt., of Madras)
12. Shri S. Bhaskar, Pambadampara Estate, Pambadampara P.O., Kerala. (Member to represent growers of cardamom)
13. Shri I. P. Rajasekhara, Igoor Estate, Igoor Post, Hassan. (Member to represent growers of cardamom)
14. Shri M. S. P. Rajes, Cauvery Peak P.O., Shearoy Hills, Salem Dist. (Member to represent growers of cardamom)
15. Shri V. D. Joseph, Cardamom Planter, Vandamettu, Kerala. (Member to represent small growers of cardamom)
16. Shri T. Jacob, Kurisumala Estate, Puttady, Vandamettu, Kerala. (Member to represent small growers of cardamom)
17. Shri H. S. Halappa, Anemahal Estate, Saklaspur Post, Mysore. (Member to represent the cardamom)
18. Shri Abhechand D. Gandhi, c/o M/s. Gandhi Sons Pvt. Ltd., Gandhi Building, Vadgadi, Bombay 3. (Member to represent the cardamom trade interest)
19. Shri S. S. Narayana Murthy, President, Coorg Cardamom Co-operative Marketing Society Ltd., Mercara. (Member to represent the cardamom trade interest)
20. Shri B. K. Nair, I.N.T.U.C. Office, P.O. Alleppey, Kerala. (Member to represent the cardamom labour interest)
21. Shri D. Venkatesh, 13, Madurai Mudaliar Road, Bangalore 23. (Member to represent the cardamom labour interest)
22. Shri T. M. Abdullah, Rahmath Bagh, P.O. Chovva, Cannanore, Kerala. (Member to represent the cardamom consumers' interest)
23. Shri N. K. Ganapaiah, President, Mysore State Cardamom Growers' Association, Saklaspur P.O. Mysore. (Member to represent 'other interests')

Except Shri P. S. Habeeb Mohamed, Chairman, all other members of the Cardamom Board named above will hold office upto the 14th April, 1969. Shri Habeeb Mohamed will hold office until further orders.

Export of Onions

The following Trade Notice (No. G-61/66 dated the 2nd June, 1966) has been issued by the Joint Chief Controller of Imports and Exports, Calcutta:

It is notified for the information of the trade that in supersession of all the previous instructions on the above subject, it has been decided that the policy with regard to the export of onions will, with immediate effect, be as indicated below:

1. Export of onions will be licensed freely on shipping bills to all categories of exporters subject to fulfilment of the following conditions:

(*a*) Production of legally valid contracts with overseas buyers. The exporters may enter into legally valid contracts with overseas buyers and thereafter register immediately all such contracts with the licensing

authorities at ports. No contracts will be registered by the licensing authorities at ports which leave the actual sale price undetermined whether by way of Escalator clause or otherwise, the sale price will also be at the prescribed floor price or above;

(*b*) Production of 100 per cent irrevocable Letter of Credit supported by the contracts;

(*c*) Quality control and pre-shipment inspection of onions as heretofore; and

(*d*) The floor price of onions will be Rs 300 per metric ton f.o.b.

2. The contracts which have been entered with the foreign buyers prior to 2nd June, 1966 will be considered, provided they are registered with the respective port authorities concerned on or before 15th June, 1966 and in such cases Letters of Credit will be immediately got opened if not already done so.

Devaluation of Rupee—Consequential Increase in the Rupee Value of Import Licences

The following Public Notice (No. 75-ITC (PN)/66 dated the 7th June, 1966) has been issued by the Government of India in the Ministry of Commerce:

As a result of devaluation of the rupee with effect from the 6th June, 1966, it has been decided to allow enhancement in the rupee value of import licenses to compensate for devaluation. The procedure to be followed in this regard is indicated below:

2. Import licences issued on or before the 5th June, 1966:

In respect of import licences issued on or before the 5th June, 1966, the c.i.f. rupee value as shown in the licence will be suitably enhanced. Such enhancement will be allowed to the extent of 57.5 per cent of that portion of the value of the licence which has not been utilised on or before the 4th June, 1966. No enhancement will be allowed in respect of the remaining value of the licence which has been utilised on or before the 5th June, 1966. For the purpose of allowing enhancement in value, the unutilised portion of the value of the licence will be judged from the Customs copy of the licence in question. However, the unutilised value will also be determined with reference to the Exchange Control copy of the licence in the following cases:

(*a*) cases involving deferred payments;

(*b*) cases in which advance remittances have been made; and

(*c*) cases in which satisfactory evidence is produced to the licensing authority to show that remittance is required to be made in respect of the balance available in the Exchange Control copy although no corresponding balance is available in the Customs copy of the licence.

In cases where enhancement in value is allowed on the basis of the unutilised balance in the Exchange Control copy of the licence, the value shown in the Customs copy will not be enhanced to the same extent. The enhancement in the Customs copy will be allowed on the unutilised balance available in that copy only. In such cases, each copy of the licence will be increased in value for the amount appropriate thereto.

3. Import licences issued on or after 6th June, 1966, but not later than 10th June, 1966:

In the case of import licences issued on or after the 6th June, 1966 but not later than 10th June, 1966, c.i.f. rupee value as shown in the licence will be enhanced by 57.5 per cent thereof. Such enhancement will be worked out even for that portion of the value of the licence which has been utilised on or after the 6th June, 1966. The enhanced rupee value in such cases will be effective from the date of the issue of the licence.

4. Import licences issued after 10th June, 1966:

The c.i.f. rupee value of import licences to be issued after the 10th June, 1966, will be determined by the licensing authorities having regard to the new rate of exchange and no enhancement in the value of such licences will be allowed subsequently.

5. The enhancement in rupee value to be allowed in case covered by paras 2 and 3 above will be the value asked for by the licencee or the value worked out in the basis indicated in paras 2 and 3 above, whichever is less.

6. Requests for enhancement in the value of import licences in terms of this Public Notice may be made to the licensing authority who issued the licence or to any other regional licensing authority in the form appended to this Public Notice (in duplicate). However, in the case of C.G./H.E.P. licences, such requests should be made in the said prescribed form (in duplicate) to the licensing authority who issued the licence. The applications for enhancement in value should reach the licensing authorities, by the 15th July, 1966. The applicant should produce with the Customs and the Exchange Control copies of the licence with his application for enhancement in value. The licensing authority will, after checking the correctness of the amount asked for, endorse both the Customs and Exchange Control copies of the licence as under:

'Value enhanced to Rs.....with effect from. . . .'

The provisions of this Public Notice will apply to all import licences including those issued for import from rupee payment countries.

Grant of entitlement licences against exports effected upto 5th June, 1966, under the erstwhile E.P. Schemes

The following Public Notice (No. 77-ITC (PN)/66 dated the 9th June, 1966) has been issued by the Government of India in the Ministry of Commerce:

Attention is invited to the Ministry of Commerce Public Notice No. ITC (PN) (Z)/66 dated the 6th June, 1966, according to which all E.P. Schemes whether operated through the Export Promotion Councils/ Commodity Boards or otherwise as well as those administered by the port licensing authorities, have been abolished.

2. It has now been decided that applications for import entitlement as admissible before the date of the abolition of the aforeside E.P. Schemes may be considered in respect of the exports effected on or before the 5th June, 1966.

3. Exporters who are eligible for the grant of import licences in terms of this policy should make applications for import licences in the prescribed form and manner duly supported by the following shipping documents:

(*i*) Bill of lading or airway bills in case of export by air or postal receipts in case of exports by post;

(*ii*) Shipping bill duly authenticated by the Customs; and

(*iii*) Bank attested invoice.

In case of exports made by Value Payable Post Parcel (V.P.P.), the following document should be produced:

(*i*) invoice giving description of goods and weight of the individual items and their total value actually exported.

(*ii*) relevant postal receipt.

Bank certificates need not be produced.

4. Applications should be made in respect of the schemes included in Annexure II to Appendix 23 of the Import Trade Control Policy Book 1966-67 to the concerned Import Control Authorities and in respect of Special E.P. Schemes to the relevant E.P. Councils and Commodity Boards so as to reach them not later than

25th June, 1966. Applications received after this date i.e., 25th June, 1966, will not be entertained.

5. Applications received by them with their recommendations so as to reach the Import Licensing Authorities concerned not later than 9th July, 1966.

6. All applications covering exports effected upto 5th June, 1966, already pending with the E.P. Councils/Commodity Boards/ Import Licensing authorities will also be disposed of in terms of provisions of this Public Notice.

7. Both in respect of applications made on or before the 5th June, 1966 and applications to be received thereafter upto 25th June, 1966, the import entitlement will be worked out on the basis of the F.O.R. value as shown in the shipping documents and in terms of the relevant E.P. Schemes as in force upto the 5th June, 1966. The entitlement so worked out will then be increased by 57.5 per cent thereof.

8. The applications made against exports on consignment basis effected upto 5th June, 1966, will also be considered provided (*a*) the applications are received by the concerned E.P. Council/Commodity Board/ Licensing authority as the case may be, on or before the 25th June, 1966; and (*b*) requisite documentary evidence to the effect that the sales against such exports have been accepted, is furnished to the licensing authorities on or before 9th July, 1966.

9. The dates prescribed under this Public Notice would be strictly adhered to and no relaxation thereof would be allowed under any circumstances.

10. In respect of import licences issued on or before the 5th June, 1966, the C.I.F. rupee value as shown in the valid licences will be enhanced in accordance with para 2 of Public Notice No. 75-ITC (PN)/66 dated the 7th June, 1966.

Devaluation of Rupee—Consequential Increase in the Rupee Value of Import Licences

The following Public Notice (No. 80-ITC (PN)/66 dated the 10th June, 1966) has been issued by the Government of India in the Ministry of Commerce:

Attention is invited to the Ministry of Commerce Public Notice No. 75-ITC (PN)/66 dated 7th June, 1966, regarding enhancement in the rupee value of import licences to compensate for devaluation of the rupee.

On a review of the position, it has been decided that in cases where goods have been shipped on or before the 10th June, 1966, leaving no balance in the licence for further shipments, the licensees need not present their licences to the Import and Export Trade Control authorities for enhancement in value. In such cases, the value of the licences will be deemed to have been automatically enhanced to the extent provided in Public Notice No. 75-ITC (PN)/66 dated 7th June, 1966, for the purpose of clearance and remittance. The provisions of Ministry of Commerce Public Notice No. 75-ITC (PN)/66 dated the 7th June, 1966, may be deemed to have been amended accordingly.

It has been provided in paragraph 4 of the Ministry of Commerce Public Notice No. 75-ITC (PN)/66 dated 7th June, 1966, that the c.i.f. rupee value of import licences to be issued after 10th June, 1966, will be determined by the licensing authorities having regard to the new rate of exchange. It is clarified in this connection that in such cases the question of the licences being produced for enhancement in value does not arise.

Import policy for actual users for the year April, 1966—March, 1967—issue of advance licences of raw materials, components and spares

The following Public Notice (No. 81-ITC (PN)/66 dated the 10th June, 1966) has

been issued by the Government of India in the Commerce Ministry:

Attention is invited to para 2 of the Ministry of Commerce Public Notice No. 68-ITC (PN)/66 dated the 28th May, 1966, according to which actual users both in the scheduled and non-scheduled sectors including small scale units are required to apply for the grant of advance licences for the import of raw materials, components and spares for the year April, 1966—March, 1967.

On a review of the position, it has been decided that requests for the issue of advance licences in terms of the aforesaid Public Notice may be considered only from actual users borne on the books of the Directorate General of Technical Development and small scale units.

The provisions of Public Notice No. 68-ITC (PN)/66 dated the 28th May, 1966, may be deemed to have been amended accordingly.

Abolition of Export Promotion Scheme

The following Public Notice (No. ITC (PN) (Z)/66 dated the 6th June, 1966) has been issued by the Government of India in the Ministry of Commerce:

Attention is invited to Annexure II of Appendix 23 of the import Trade Control Policy Book for the year April, 1966-March, 1967 and as amended from time to time, laying down the Export Promotion Schemes providing for grant of import entitlement licences.

It has been decided to abolish with immediate effect the aforesaid Export Promotion Schemes.

It has also been decided to abolish with immediate effect all other Special Export Promotion Schemes providing for grant of import entitlement licences whether operated through the Export Promotion Councils and Commodity Boards or otherwise.

Devaluation of Rupee—Consequential increase in the Rupee Value of Import Licences

The following Public Notice (No. I & E/IV/3-2/66 dated the 16th June, 1966) has been issued by the Iron and Steel Controller, 33, Netaji Subhas Road, Calcutta 1:

Consequent on the devaluation of the rupee with effect from 6th June, 1966, it has been decided to allow enhancement in the rupee value of the Import licences issued by the Iron and Steel Controller, Calcutta and his Regional Offices in Delhi, Bombay and Madras to compensate for devaluation. The procedure to be followed in this regard will be the same as has been outlined in Ministry of Commerce Public Notices dated 7th June, 1966, and 80-ITC (PN)/66 dated the 10th June, 1966.

Applications for enhancement in value may be made to the licensing authority who issued the licences in the form appended to Ministry of Commerce Public Notice No. 75-ITC (PN)/66 dated 7th June, 1966 (in duplicate).

Attention is also invited to Ministry of Commerce Public Notices Nos. ITC (PN) (Z)/66 dated 6th June, 1966 and 66-ITC (PN)/66 dated 9th June, 1966. The procedure prescribed therein will be followed in respect of import entitlement licences issued/to be issued by the Iron and Steel Controller, Calcutta and his Regional Offices in Delhi, Bombay and Madras.

The applications for enhancement of value of import licence issued by the Iron and Steel Controller, Calcutta and his Regional Offices should reach the licensing authority concerned by 25th July, 1966, instead of 15th July, 1966, as mentioned in para 6 of Ministry of Commerce Public Notice dated 7th June, 1966.

Men and Companies

Shri P. H. Bhatt

Shri P. H. Bhatt, Kaira District Co-operative Milk Producers' Union Limited, Anand, Gujarat was deputed by the Food and Agriculture Organisation of the United Nations (F.A.O.), as Marketing Expert to Saudi Arabia, for a period of one year. His assignment was with the Ministry of Commerce and Industry, Government of Saudi Arabia, Riadh.

During this period Shri Bhatt prepared two reports: (1) Cold Storage Industry in the Kingdom of Saudi Arabia (1965) and (2) Regulations, Enforcement of Quality Control standards in the Kingdom of Saudi Arabia. He made several recommendations in these reports.

Government of Saudi Arabia has established two Quality Control Food Laboratories. Based on the recommendations of Shri Bhatt, the F.A.O. has suggested that the operations of these Laboratories and training of personnel be entrusted to the Central Organisation and Nutrition of Food Research, Netherlands. The Laboratories will start functioning very shortly.

The Government of Saudi Arabia has decided to become a member of the International Standards Organisation, Geneva and F.A.O./W.H.O. Codex, Alimentus Commission for Food Standards. The Government is also actively thinking of establishing Saudi Arabian Standards Organisation for which a draft constitution has been prepared on the lines of Indian Standards Institution.

* * * *

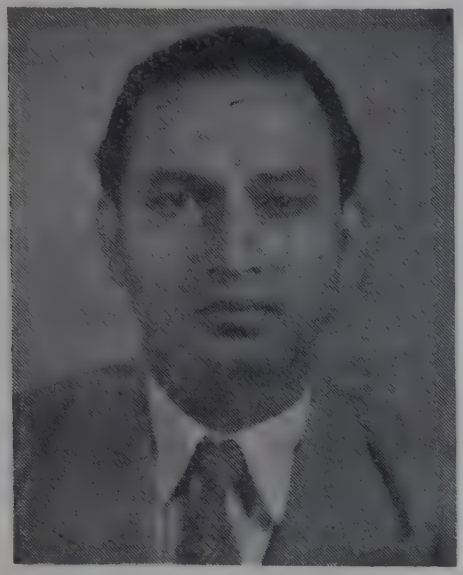
Shri Daya Nand, Industrial Adviser to U.P. Govt. Directorate of Fruit Utilization, has rejoined the Directorate of Marketing and Inspection, Ministry of Food and Agriculture, Nagpur, as Senior Marketing Officer (Fruit Products).

Shri Daya Nand is a Science Graduate of the Punjab University. He has also passed advanced course in Fruit and Vegetable Technology from the Punjab Agriculture College, Lyallpur. He worked as Chief Chemist, Agmark Ghee Grading Station, Lyallpur, from 1941 to 1946. In 1946, he joined the Directorate of Marketing and Inspection as Inspector, Fruit Products for the development of fruit processing industry and enforcement of Fruit Products Order.

In 1956, he visited U.K., France, Switzerland, Germany, Holland and Italy for six months on F.A.O. Fellowship. In 1965, he was deputed, for a period of three months, by the Government of India and was attached to the Economic Commission for Africa at Addis Ababa, Ethiopia, to prepare a paper on Agro-based Industries in Ethiopia and Somalia for Lusaka Conference.

Shri Daya Nand was a Senior Marketing Officer (Fruit Products) from 1960-63 before he was appointed as Industrial Adviser, Fruit Preservation, to the Directorate of Fruit Utilization, U.P. He served in this capacity from 1963 till recently.

Shri S. C. Bhattacharjya, Deputy Senior Marketing Development Officer (Fruit Products), Directorate of Marketing and Inspection, Government of India, Nagpur, has been appointed Scientist 'C' in the



Central Food Technological Research Institute, Mysore. He will look after the C.F.T.R.I. Experiment Station at Calcutta.

Shri Bhattacharjya did B.Sc. with Distinction in Chemistry, Physics and Mathematics. He took Diploma in Fruit and Vegetable Technology, from the Indian Institute of Fruit Technology, Lyallpur, in 1946-47. He spent six months in Australia in 1961 with a Fellowship from the Food and Agricultural Organization of the United Nations for training in Horticultural Development and Fruit Preservation.

In 1948, Shri Bhattacharjya joined the Department of Agriculture, Assam, and started the Fruit Technological Laboratory at Gauhati. He worked with the Government of Assam for five years. In 1953, he joined the Directorate of Marketing and Inspection, Government of India, as Marketing Development Officer, Fruit Products. He has been intimately connected with the development of fruit preservation industry in Assam, Manipur, Tripura, Sikkim, West Bengal and Madras.

Shri Bhattacharjya had been carrying out the duties of the Senior Marketing Officer, Fruit Products, Nagpur, for 2-3 years.

We wish every success to Shri Bhattacharjya in his new assignment.

* * * *

Shri M. S. Laul, B.Sc. (Tech.), Deputy Senior Marketing Development Officer, Fruit Products, Directorate of Marketing

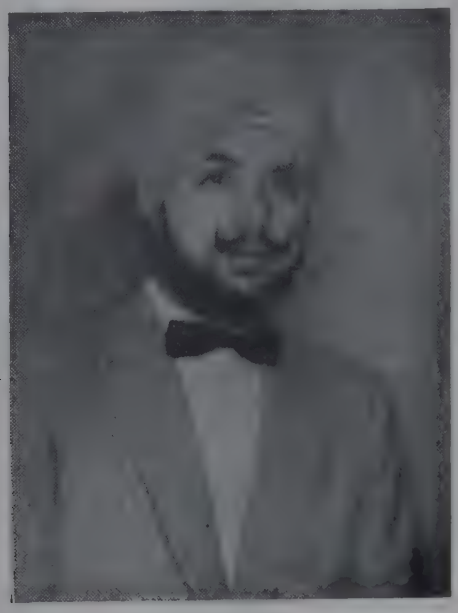
and Inspection, Nagpur, has been appointed Scientist 'C' in the Discipline of Industrial Research Consultancy and Extension, Central Food Technological Research Institute, Mysore.

After completing B.Sc. (Tech.) with specialisation in the Chemical Engineering of the Nagpur University in 1949, Shri Laul joined the Central Hindusthan Orange Cold Storage Pvt. Ltd., Nagpur, and worked in this organisation for 7 years looking after the production and quality control departments. He had the benefit of associating himself with the experts from Japan who were engaged in the development of canning orange segments in syrups and erection, operation and maintenance of Orange Concentrate and Orange Oil plant in the organisation.

He was awarded a fellowship under the Colombo Plan for advanced training in Fruit and Vegetable Preservation in Australia for six months.

* * * *

Shri Laljeet Singh, Officer Incharge, Central Food Technological Research Institute Experiment Station, Simla, has joined the Punjab State Co-operative Supply and Marketing Federation Limited, Chandigarh,



as Processing Expert. The scheme is sponsored by the National Co-operative Development Corporation, Government of India, for promotional and assessment work relating to agricultural processing units in the Co-operative Sector.

Born at Lyallpur on 2nd July, 1932, he received his early education at Lyallpur and Amritsar. He passed B.Sc. Agriculture from Punjab University in 1952 standing First in Chemistry major. He joined the Department of Agriculture, Himachal Pradesh and worked in the apple growing regions of Kotgarh. He was deputed for postgraduate training at the Central Food Technological Research Institute, Mysore, in 1956 and passed out in 1958 securing First Class. He submitted a thesis on the Technological aspects of garlic powder manufacture and storage. He came back to Himachal Pradesh as Assistant Fruit Technologist. He set up two fruit processing units in the public sector and organised research, extension and development activities. It 1962, he joined C.F.T.R.I. as Senior Scientific Officer and worked for three years as Officer Incharge, Experiment Station, Simla.

Shri Laljeet Singh has published about 20 papers. He has done work pertaining to packaging and storage of temperate fruits, processing of apples and Hill Maize. He has conducted survey on fruit resources of hill areas. He was Assistant Secretary of the Himachal Pradesh Fruit Development Board from 1959 to 1962 and is member of editorial committee of Himachal Horticulture, published by H.P. Fruit Development Board. He has been Office-bearer of the Simla Association for the advancement of Agricultural Science and has served the Organization as Secretary, Councillor and Treasurer for several years. He is a member of Association of Food Technologists (India).

* * * * *

Hindustan Lever Limited

The Annual General Meeting of Hindustan Lever Limited was held at Bombay on 27th April, 1966. Shri Prakash Tandon, the Chairman of the Company, in his speech traced the history of the Company's Advisory Services and Marketing Research where he started his carrier in 1937. He explained at length the activities and the importance of this service and emphasised the need of Marketing Research.

Agricultural Dairy and Animal Feeding Stuff Research

A group of scientists are working in research development and extension to tackle problems such as optimum ration for poultry and milch cattle at all stages of

growth, and the best way to grow peas and other vegetables with their dehydration characteristics in mind. A small experimental poultry unit, a trial herd and agricultural research fields are being developed to give an insight into the problems. This will help to ensure an inflow of raw materials for processing and out-flow of variety of inputs to farmers to improve their yield and quality.

Research and Factory Development

The work on import substitution has resulted in reducing the imports from 5 per cent to 1.35 per cent while the turnover has gone up from 46 crores in 1960 to Rs 71 crores in 1965; imports have come down from 2.30 crores to Rs 0.91 crores. This is due to the unceasing efforts of the Research and Development department at finding out new substitutes, upgrading low grade materials. Research and Development have helped to develop a variety of products like Ghee, Baby Food, Cheese, Soups, vegetables and a range of convenience foods.

By early next year, the new Research and Development Laboratory near Santa Cruz airport in Bombay with a staff of 130, including 30 senior scientists, will be ready.

Say "Cheese"

Saying it is easy. Making it from buffaloes' milk wasn't. There were problems. Like slow ripening. Lack of control over "body" and flavour.

It took us 3 years to solve these problems. Three years of solid work at the Kaira Co-operative's research laboratories.

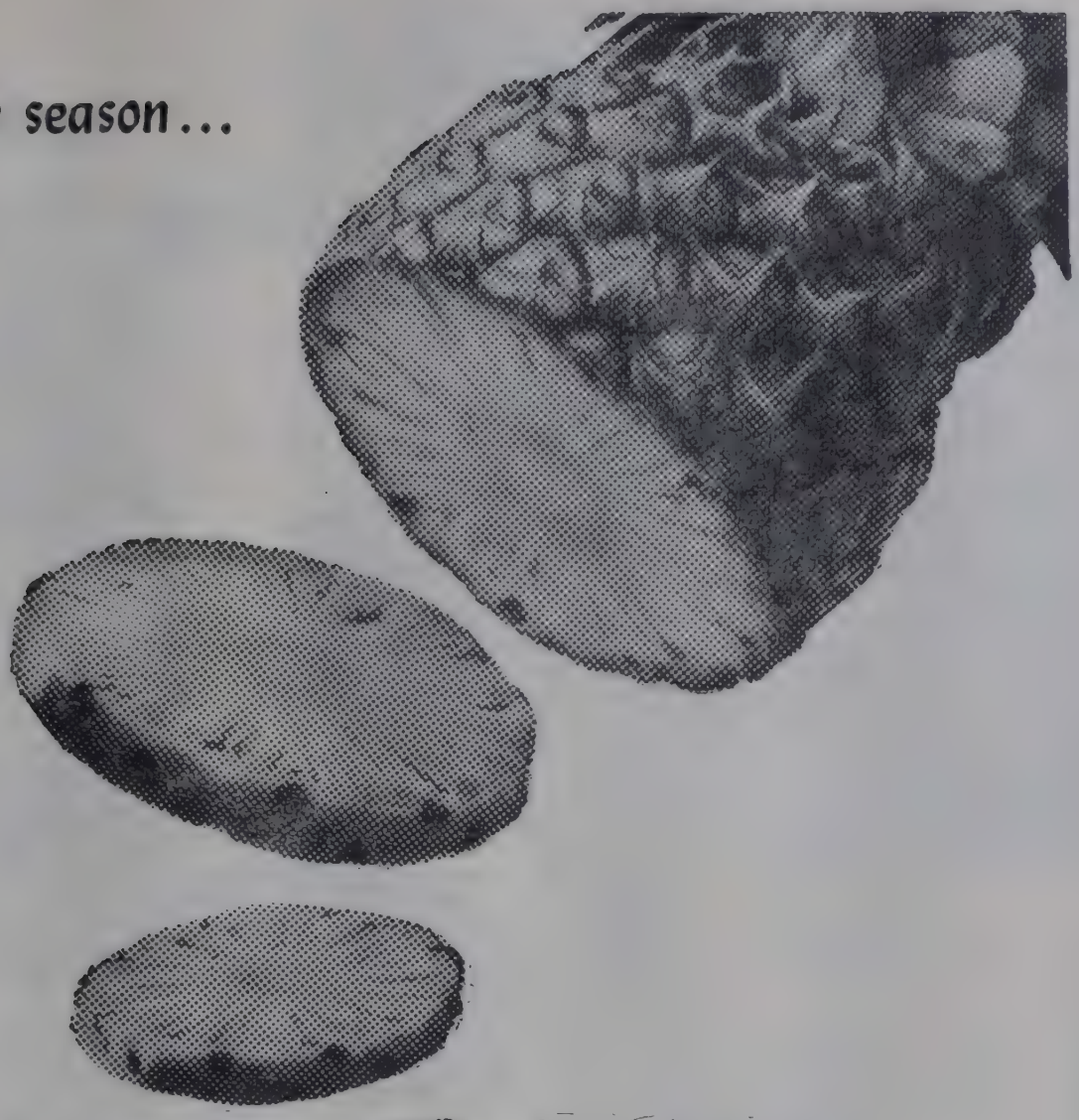
Finally we did it—by modifying the usual cheese-making process. AMUL CHEESE was worth all the effort and time spent on it.

The next time you're photographed, don't be surprised if you think of AMUL when you say "CHEESE".

KAIRA CO-OP.
where milk has worked a miracle

CMKMP-49

pick of the season...



Poysha containers bring it to you

Not only fruits but also other foods as well as pharmaceuticals, vegetable and mineral oils, paints and dyes...they all come to you in protective Poysha containers. Poysha serves all the major industries catering to your daily needs. Poysha's sales have increased eightfold in as many years: a phenomenal growth record indeed. Today, it ranks second among Indian container makers; but it is second to none in quality and service, thanks to its expert personnel, strict quality control and the most modern machinery.

To serve you even better, Poysha has joined hands with one of Europe's leaders in packaging: Lubecawerke of West Germany. Now all of Lubecawerke's experience and expertise pooled in its Central Laboratory are available to Poysha for its large expansion programme. Its 3 new factories at Thana (Bombay), Ghaziabad (Delhi) and Cochin will soon be ready. Then it will make 5 containers for every 2 it makes today. What's more, it will offer comprehensive technical advice, better on-the-spot service and a wider choice of packaging materials to industries all over the country. For you, this will mean more and more of the better things you need...in Poysha containers — which even now run into millions every year.

POYSHA: ALREADY INDIA'S SECOND LARGEST CONTAINER MAKER—AND STILL GROWING RAPIDLY

POYSHA INDUSTRIAL COMPANY LIMITED

BOMBAY • NEW DELHI • COCHIN Subsidiary: KAIRA CAN COMPANY LIMITED, ANAND

CMPI-21

when energy flags

TP—5/62

fortify with GUAVA JUICE

Hard work drains energy. A good fortification against fatigue is Tims Guava Juice because it contains vitamin C in abundance. This vitamin also helps resist infection and build body.

Human system can store up some of the vitamins but not vitamin C. A daily intake of vitamin C is therefore necessary for balanced health.

Your Doctor will tell you that Guavas are the richest source of natural vitamin C—many times more than citrus fruits like orange. A higher percentage of this vitamin is stable in Guavas than in oranges. Consequently more of it is retained after processing and canning and during shelf life. Taken daily Guava Juice will nourish your system with the essential vitamin C and build up a healthy body.

Make Guava Juice a daily habit

TIMS

GUAVA JUICE

Delicious flavour and taste

Relished by children and grown ups

Least expensive of fruit juices

AVAILABLE AT ALL STORES IN 28 OZ, 15 OZ AND 11 OZ TINS

TIMS PRODUCTS Ltd., 15 India Exchange Place, Calcutta 1

delightful...
delicious...
different...

More than a dozen delicious varieties of Indian fruits and vegetables from which to choose. Try them all. You'll enjoy them.

Fruits : Mango Cheeks and Slices, Mango Pulp, Guava Slices, Papaya Chunks.

Nectar : Mango Nectar, Guava Nectar, Papaya Nectar, Tomato Juice.

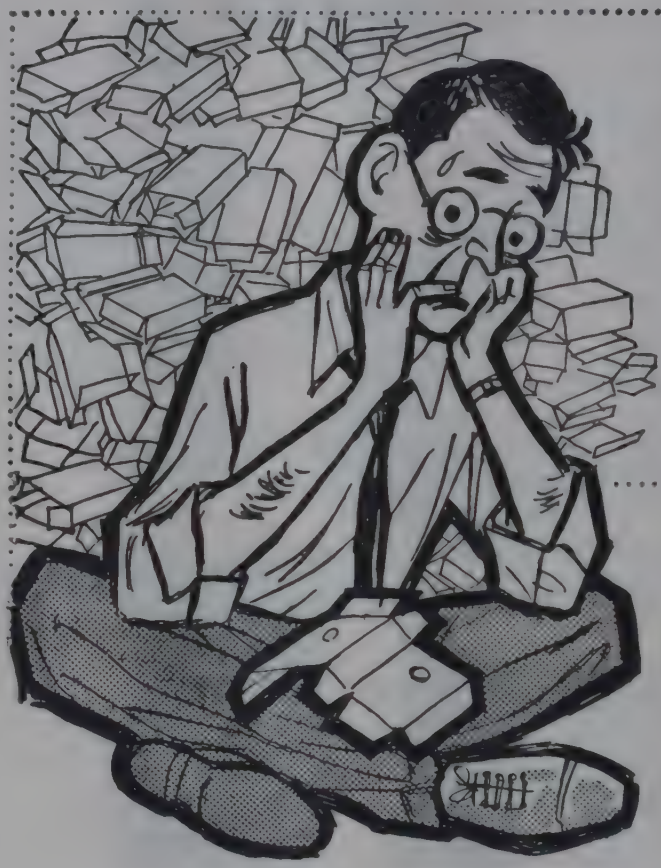
Vegetables : Karela in Brine, Okra in Tomato Sauce, Tinda in Brine, Baked Beans in Tomato Sauce, Parwal in Brine, Kantola in Brine, Brinjal in Brine.

Madhu

the sign of good taste!

OPM-34

PURE PRODUCTS & MADHU CANNING LTD. Bombay.



A pasting problem...

getting you down?
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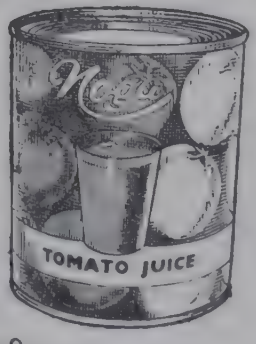
ठण्डा और स्वादिष्ट पेय

ठण्डे डिब्बों में रखे हुए नोगा आरेंज और टोमाटो के ज्यूस—याने ठण्डे और स्वादिष्ट पेय। मेहमानों की खातिरदारी में...भोजन के समय...या थकावट दूर करने के लिये इनकी बराबरी नहीं हो सकती। इनमें विटामिन भी भरपुर हैं। दोनों ने ही १९६४ की अखिल भारतीय नींबू और सब्जी प्रदर्शनी में प्रथम पुरस्कार प्राप्त किये हैं। नोगा आरेंज ज्यूस और मैंगो नेक्टर ६ः औंस के छोटे डिब्बों में मिलते हैं। नागपुर के नेहतरीत फलों का स्वाद लीजिये।

Noga

आरेंज-टोमाटो ज्यूस

मैंगो नेक्टर



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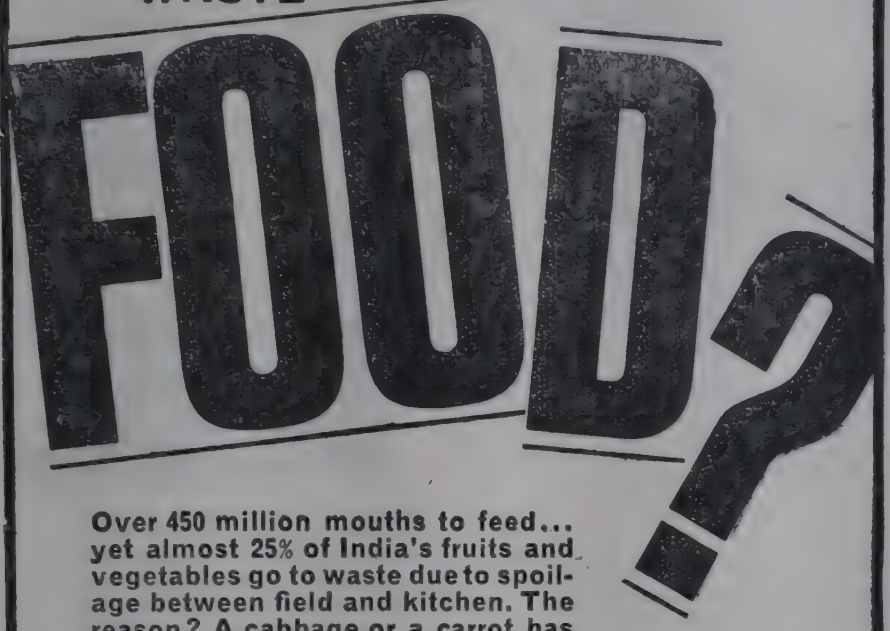
Manufacturers:

TULIP PRODUCTS COMPANY

CALCUTTA AND SRINAGAR (Kashmir)

CAN WE AFFORD TO WASTE



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HINDUSTAN LEVER studied the problem... consulted Unilever food experts... then made a beginning by setting up a modern dehydration plant at Ghaziabad.

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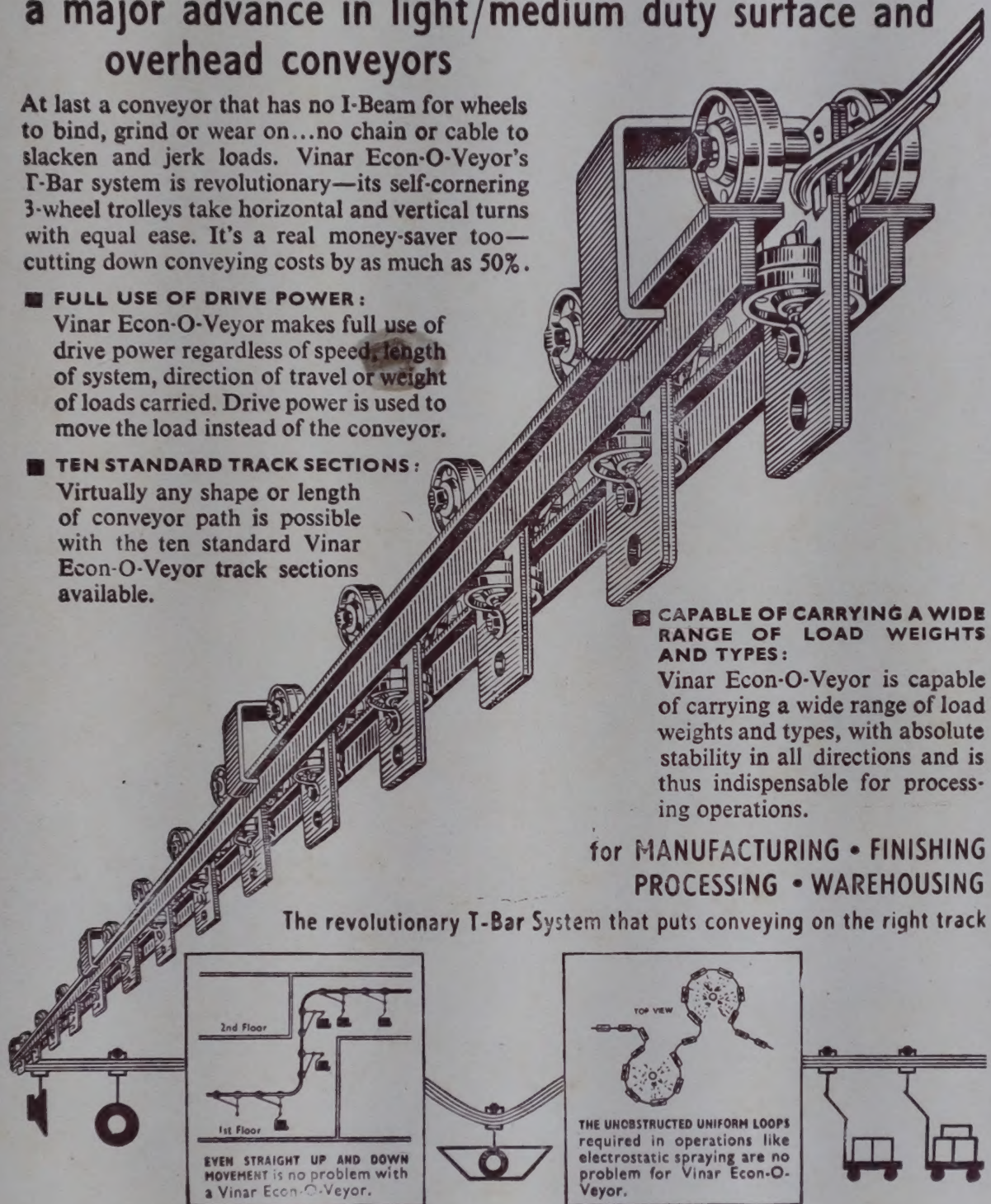

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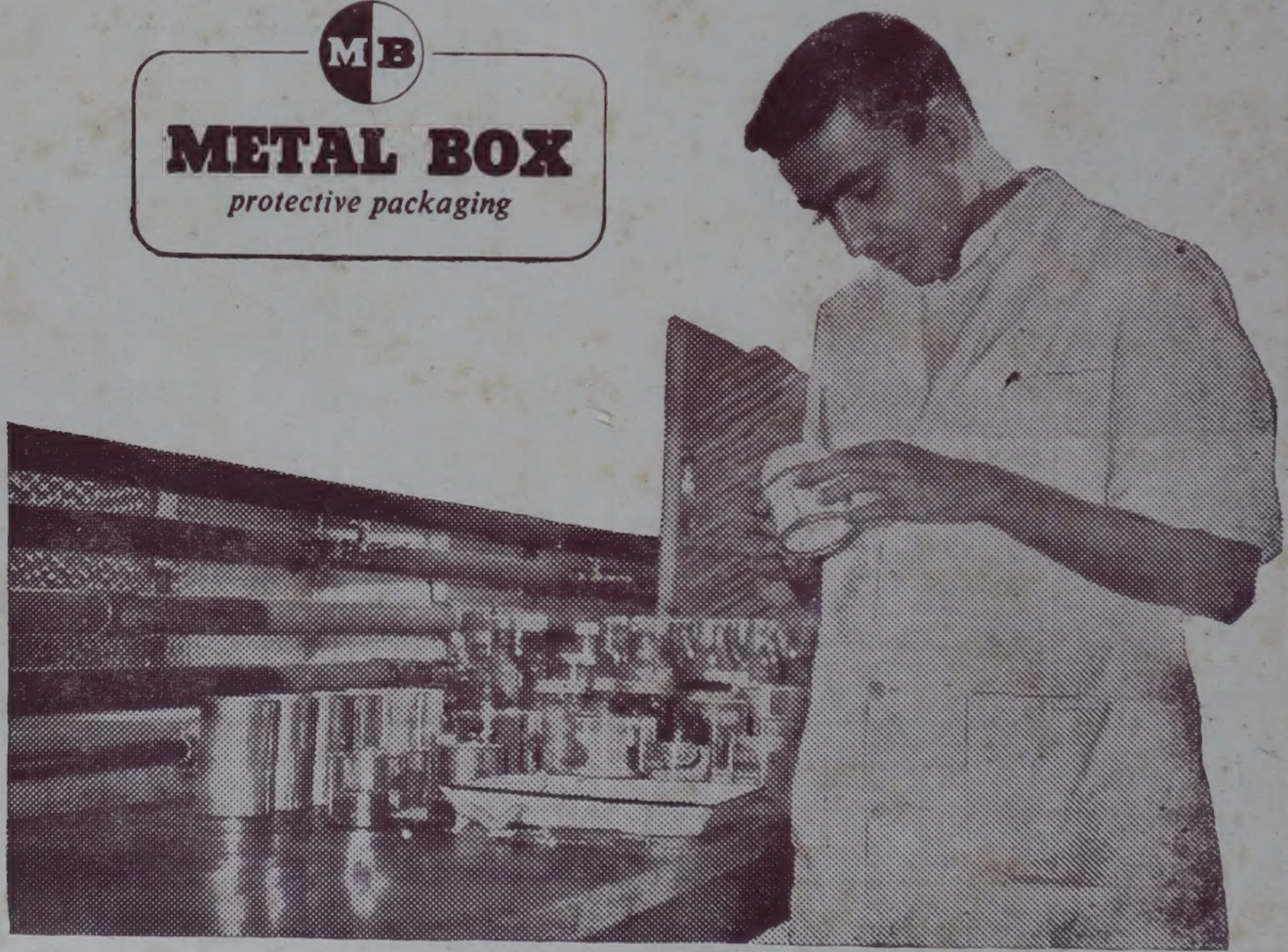

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